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Revista	**CELLS**
ISSN	eISSN 2073-4409
DOI	https://doi.org/10.3390/cells13100804
Título del Artículo	A Highly Sensitive Molecular Technique for RNA Virus Detection
Autores e instituciones de adscripción	Rozmyslowicz T.[1], Arévalo-Romero H.[2]., Conover D.O.,[1] Fuentes-Pananá [3] E.M., León-Juárez M [4]., Gaulton G.N.[1] [1] Department of Pathology and Laboratory Medicine, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA 19104, USA [2] Laboratorio de Inmunología y Microbiología Molecular, División Académica Multidisciplinaria de Jalpa de Méndez. Departamento de Genómica, Universidad Juárez Autónoma de Tabasco, Jalpa de Méndez 86205, Mexico [3] Unidad de Investigación en Virología y Cáncer, Hospital Infantil de México Federico Gómez, Ciudad de México 06720, Mexico [4] Laboratorio de Virología Perinatal, Departamento de Inmunobioquímica, Instituto Nacional de Perinatología Isidro Espinosa de los Reyes, Ciudad de México 06720, Mexico
Resumen	Zika (ZIKV) and Chikungunya (CHIKV) viruses are mosquito-transmitted infections, or vector-borne pathogens, that emerged a few years ago. Reliable diagnostic tools for ZIKV and CHIKV—inexpensive, multiplexed, rapid, highly sensitive, and specific point-of-care (POC) systems—are vital for appropriate risk management and therapy. We recently studied a detection system with great success in Mexico (Villahermosa, state of Tabasco), working with human sera from patients infected with those viruses. The research conducted in Mexico validated the efficacy of a novel two-step rapid isothermal amplification technique (RAMP). This approach, which encompasses recombinase polymerase amplification (RPA) followed by loop-mediated isothermal amplification (LAMP), had been previously established in the lab using lab-derived Zika (ZIKV) and Chikungunya (CHIKV) viruses. Crucially, our findings confirmed that this technique is also effective when applied to human sera samples collected from locally infected individuals in Mexico.
Palabras claves	Zika; Chikungunya; LAMP; detection; diagnostics

Revista	**RESEARCH IN VETERINARY SCIENCE**
ISSN	eISSN: 0034-5288
DOI	https://doi.org/10.1016/j.rvsc.2024.105181
Título del Artículo	A meta-analysis of essential oils as a dietary additive for weaned piglets: Growth performance, antioxidant status, immune response, and intestinal morphology
Autores e instituciones de adscripción	Pedro Abel Hernández-García [1], José Felipe Orzuna-Orzuna [2], Juan Eduardo Godina-Rodríguez [3], Alfonso Juventino Chay-Canul [4], Gabriela Vázquez Silva [5] [1] Centro Universitario UAEM Amecameca, Universidad Autónoma del Estado de México, Amecameca, Mexico [2] Departamento de Zootecnia, Universidad Autónoma Chapingo, Texcoco, Mexico [3] Instituto Nacional de Investigaciones Forestales Agrícolas y Pecuarias, Campo Experimental Uruapan, Av. Latinoamérica 1001, Uruapan, Michoacán C.P. 60150, Mexico [4] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Villahermosa, Mexico [5] Departamento El Hombre y su Ambiente, Universidad Autónoma Metropolitana—Xochimilco, Coyoacán, Ciudad de México, Mexico
Resumen	This study aimed to evaluate the effects of dietary supplementation with EOS on growth performance, blood serum antioxidant status, immune response, and intestinal morphology of weaned piglets using a meta-analytical approach. The database included 31 studies from which the response variables of interest were obtained. All data were analyzed using a random effects model, and results were expressed as weighted mean differences between treatments supplemented with and without EOS. EOS supplementation increased ($P < 0.001$) average daily feed intake, average daily gain, and final body weight and decreased ($P < 0.001$) feed conversion ratio and diarrhea incidence. Lower ($P = 0.001$) serum malondialdehyde content and higher ($P < 0.05$) serum concentrations of superoxide dismutase, catalase, glutathione peroxidase, and total antioxidant capacity were observed in response to the dietary inclusion of EOS. EOS supplementation increased ($P < 0.001$) the serum concentration of immunoglobulins A, G, and M and decreased ($P < 0.05$) the serum concentration of tumor necrosis factor-α, interleukin-1β, and interleukin-6. Greater ($P \leq 0.001$) villus height (VH) was observed in the jejunum and ileum in response to the dietary inclusion of EOS. However, EOS supplementation did not affect ($P > 0.05$) crypt depth (CD) and decreased ($P < 0.001$) the VH/CD ratio in the duodenum, jejunum, and ileum. In

Resumen	conclusion, essential oils can be used as a dietary additive to improve growth performance and reduce the incidence of diarrhea in weaned piglets and, at the same time, improve the antioxidant status in blood serum, immune response, and intestinal morphology.
Palabras claves	Bioactive compounds; Diarrhea incidence; Meta-regression; Nutrient digestibility; Phytogenics.

Revista	**AGROFORESTRY SYSTEMS**
ISSN	0167-4366
DOI	https://doi.org/10.1007/s10457-023-00928-x
Título del Artículo	Above-ground biomass estimation by developing allometric equations for *Theobroma cacao* in Tabasco, Mexico
Autores e instituciones de adscripción	Vanessa Lisbeth Morán-Villa[1]; Alejandro Ismael Monterroso-Rivas [2] ; Ricardo Mata-González, [3]; Sergio Roberto Márquez-Berber [2]; Mohamed A. B. Abdallah, [3], Eduardo Valdes-Velarde [2], Rufo Hernández-Sánchez [4] [1] Multifunctional Agriculture for Sustainable Development Program, Fitotecnia Department, Universidad Autónoma Chapingo, Km. 38.5 Carretera México-Texcoco, C.P. 56230, Texcoco, Mexico [2] Soils Department, Universidad Autónoma Chapingo, Km. 38.5 Carretera México-Texcoco, C.P. 56230, Texcoco, Mexico [3] Department of Animal and Rangeland Sciences, Oregon State University, 120 Withycombe Hall, Corvallis, OR, 97330, USA [4] Universidad Juárez Autónoma de Tabasco, C.P. 86040, Villahermosa, Tabasco, Mexico
Resumen	The cocoa tree (*Theobroma cacao L.*), widely distributed in southern and central Mexico, has many economic and ecological functions. However, there is a lack of data and information regarding the aboveground biomass (AGB) of this species in Mexico, which hampers understanding of its carbon sequestration potential. The objectives of this study were (1) to develop allometric equations to estimate AGB and (2) to determine the relationships of AGB components in cacao trees. Twenty-one trees were destructively sampled and separated into components (trunk, branches, leaves) at the Chontalpa subregion of Tabasco, a large cocoa production area. Samples of biomass cocoa trees were used to determine their carbon content. A typical cacao tree in our study area is 6.64 m in height, with a diameter at breast height (*dbh*) of 13.29 cm and with dry aboveground biomass of 37.02 kg. We found that about 50% of the biomass of a cacao tree is concentrated in the trunk while stems of different sizes, leaves, and fruits account for the other 50%. Seven AGB models were designed using *dbh*, basal diameter at 30 cm (d_{30}), total height (h), canopy area (A_c), canopy height (C_h), and crown width (C_w) as biomass predictors. The *dbh* was the best-correlated independent variable with all AGB components. Selected models showed adequate fit and performance with high R^2 (ca. 95%) in estimating AGB, but the most appropriate allometric equation was $\text{Ln (TB)} = -4.20 + 1.19 * \ln(dbh) + 2.34 * \ln(h)$ because this model had higher R^2, lower Akaike criterion, and Mallow's cp values. We recommend the use of this model to calculate aboveground biomass and carbon content for cacao trees in agroforestry systems similar to those of our study area.
Palabras claves	Aboveground biomass; Allometric equations; Carbon stock; Cocoa agroforestry systems, *Theobroma cacao*; Mexico

Revista	**REVISTA DE LA SOCIEDAD ENTOMOLÓGICA ARGENTINA**
ISSN	0373-5680
DOI	https://doi.org/10.25085/rsea.830205
Título del Artículo	Acaricidal activity of ethanolic leaf extracts of medicinal and culinary plants against *Raoiella indica* Hirst Acari: Tenuipalpidae
Autores e instituciones de adscripción	Andrea Cabrera-Manzano [1]; Rodolfo Osorio-Osorio [1]; Josafat A. Hernández-Becerra [2]; Gabriela de la Cruz-Zapata [1]; Aldenamar Cruz-Hernández [1]; Aldenamar Cruz-Hernández [1]; Alfonso J. Chay-Canul [1] [1] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco. Centro, Tabasco, México. [2]. Universidad Tecnológica de Tabasco. Centro, Tabasco, México.

Resumen	The red palm mite, *Raoiella indica* Hirst (Acari: Tenuipalpidae) is an invasive and widely dispersed pest in the Neotropical region. It is a species of economic importance in coconut palm plantations, *Cocos nucifera* L. (Arecaceae), necessitating the search for new management alternatives with lower risks to human health and the environment. The aim of this study was to evaluate the acaricidal activity of ethanolic leaf extracts of "pepper" *Pimenta dioica* (L.) Merr. (Myrtaceae), "culantro" *Eryngium foetidum* L. (Apiaceae) and "basil" *Ocimum basilicum* L. (Lamiaceae) against *R. indica* under laboratory conditions. *R. indica* females were exposed to the plant extracts at dilutions of 0.25, 0.50, 0.75 and 1% (v/v). Each experimental unit consisted of a group of 10 female mites confined on a portion of coconut palm leaflet, previously impregnated with plant extract or distilled water (control). Each treatment consisted of a total of 100 mites (10 replicates). Mite mortality was recorded after 24, 48 and 72 h. The *R. indica* mortality percentages increased due to the increase in both the concentration of the extracts and the exposure time. All extracts at the 1% dilution and 72 h exposure time caused the highest mortality percentages: for *P. dioica* 92%, *E. foetidum* 81% and *O. basilicum* 77%. Fractions of total phenols and tannins were the most abundant compounds in the three plant extracts. Both groups of compounds could be primarily responsible for the acaricidal activity of these plant extracts against *R. indica*.
Palabras claves	Bioassays, Ethanolic; extracts; Secondary; metabolites

Revista	**THERYA**
ISSN	2007-3364
DOI	https://doi.org/10.12933/therya-24-5705.
Título del Artículo	Activity patterns and use of artificial water ponds by White-tailed deer (*Odocoileus virginianus*) in western Campeche
Autores e instituciones de adscripción	Mircea G. Hidalgo-Mihart [1]; Alejandro Jesús-de la Cruz [2]; Yaribeth Bravata-de la Cruz [1]; Fernando M. Contreras-Moreno [3,4], [1] División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco. Km 0.5 Carretera Villahermosa-Cárdenas, CP. 86039, Villahermosa. Tabasco, México [2] Panthera México, Guanajuato, San Miguel de Allende, CP. 37750, Mexico; [3] World Wildlife Fund Inc, Av. Insurgentes Sur 1216, Ciudad de México, Benito Juárez, CP. 03100, Mexico, [4] Universidad Tecnológica de Calakmul, Carretera Estatal Xpujil-Dzibalchen Km. 2+260, Campeche, Xpujil, Mexico
Resumen	Artificial Water Ponds (AWP) are widely employed for preserving and managing white-tailed deer (*Odocoileus virginianus*) in arid, and tropical regions of Mexico. However, there is a significant knowledge gap concerning the impact of these AWP on white-tailed deer activity. To determine the effect of AWP on the ecological aspects of white-tailed deer, we assessed the visitation rates and activity patterns of this species in AWP and compared them with areas devoid of water such as Dirt Roads (DR) using camera traps during the dry season within the seasonal wetland region of Nicte Ha, situated in western Campeche, Mexico. The research was conducted in a highly seasonal tropical wetland area at the Nicte-Ha UMA in southwestern Campeche, México. We established set camera trap stations during the dry season of 2019, 2020, and 2021 in seven AWP and 12 DR that operated for at least 80 days and compared the white-tailed deer visitation rate (measured as the Relative Abundance Index, RAI) and activity patterns among both treatments and across the three studied years. We collected a total of 3,640 independent records of white-tailed deer (2,584 in AWP and 1,056 in DR) for three years, with a combined effort of 3,978 camera days (1,306 camera days in AWP and 2,672 in DR). Our analysis revealed that the Relative Abundance Index (RAI) was consistently higher in the AWP than the DR across the three study years. However, we examined RAI variations over the three years and observed differences in the AWP, while the DR exhibited a relatively stable pattern. In the case of the activity patterns, we observed that white-tailed deer were primarily diurnal, with a significant overlap in activity between the two treatment areas. Nonetheless, within the AWP, the species exhibited continuous daytime activity, whereas, in the PR, distinct activity peaks occurred during sunrise and sunset. The results show that the presence of AWP in Nicte Ha has important effects on the presence of white-tailed deer during the dry season since we observed that there is a higher RAI in the sites where there is AWP compared to the PR sites. In the case of activity patterns, the AWP sites maintain constant activity throughout the day compared to DR, where activity peaks associated with sunrise and sunset occur. Our results show the importance that this type of structure has for the management of the species

Resumen	during the dry season of the year in Nicte Ha and the potential benefits of these structures in tropical seasonal areas, especially under a scenario in which drought during the dry season may be more severe in the near future due to the global change.
Palabras claves	Camera trap; Drought; Laguna de Terminos; Seasonal tropical area; Wetland

Revista	**ZOONOSES AND PUBLIC HEALTH**
ISSN	2366-7532
DOI	https://doi.org/10.1007/s41252-023-00366-x
Título del Artículo	Advances and Challenges in the Assessment of Executive Functions in Under 36 Months: a Scoping Review
Autores e instituciones de adscripción	Valeria Escobar-Ruiz[1]; Pedro I. Arias-Vázquez[2]; Carlos A. Tovilla-Zárate[2]; Eduardo Doval [1];Maria C. Jané-Ballabriga[1]; [1] Universitat Autònoma de Barcelona, Belaterra, Barcelona, España [2] División Académica Multidisciplinaria de Comalcalco, Universidad Juárez Autónoma de Tabasco, Comalcalco, Tabasco, México
Resumen	**Objectives** Neurodevelopmental disorders present deficits in executive functions (EFs). Before 36 months old, EFs act as basic abilities that allow adequate executive functioning at later ages. Three basic EFs are assessable before the child reaches 36 months old: working memory, inhibition, and cognitive flexibility. This review aims to provide an overview of the progress and difficulties in assessing these three basic executive functions before children reach 36 months old. **Methods** Four databases were systematically searched without time or language limitations. The selection process was done using a PRISMA flowchart for scoping reviews. Sixteen studies were included, all in English and published between 2004 and 2021. **Results** Out of 277 studies, 16 met the inclusion criteria. The general data of the studies were summarized, such as sample age, type of study, measurement features, types of EFs assessed, task names, internal structure, reliability, and main contributions. The findings on available tasks and scales, factor structure, biological and environmental factors, and the variables influencing EFs before 36 months old are described. **Conclusions** Multiple factors influenced the evolution of EFs. The unidimensional model seems to better explain EFs before 36 months old. Expanding psychometric research with large samples and studying samples of children with symptoms at risk for neurodevelopmental disorders may help to improve the measurement of EFs before 36 months old.
Palabras claves	Executive functions; Working memory; Inhibition; Cognitive flexibility; Infant; Toddlers

Revista	**EUROPEAN JOURNAL OF TRAUMA AND DISSOCIATION**
ISSN	2468-7499
DOI	https://doi.org/10.1016/j.ejtd.2024.100412
Título del Artículo	Adverse childhood experiences, perceived stress, and chronic diseases among older adults: A cross-sectional study in Mexico
Autores e instituciones de adscripción	Izbeidi Jabelt Madrigal González [1] Thelma Beatriz González-Castro [1], Carlos Alfonso Tovilla-Zárate [2], Yazmín Hernández-Díaz [1], Isela Esther Juárez Rojop [3], Jorge Luis Hernández-Vicencio [4], María Lilia López-Narváez [2], Edith Elena Uresti-Rivera [5,6], Jorge Rebollo-Meza [7], Matilde del Carmen Frías de la Cruz [1] [1] División Académica Multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, Jalpa de Méndez, Tabasco, México [2] División Académica Multidisciplinaria de Comalcalco, Universidad Juárez Autónoma de Tabasco, Comalcalco, Tabasco, México [3] División Académica de Ciencias de la Salud, Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México [4] Universidad Tecnológica de Tabasco, Centro, Tabasco, México [5] Facultad de Ciencias Químicas, Universidad Autónoma de San Luis Potosí, San Luis Potosí, SLP, México [6] Centro de Investigación en Ciencias de la Salud y Biomedicina, Universidad Autónoma de San Luis Potosí, San Luis Potosí, SLP, México [7] División Académica de Ciencias Económico Administrativas, Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México

Resumen	**Background:** adverse childhood experiences (ACEs) are traumatic events that cause a condition of chronic stress in the body and that are related to subsequent cognitive decline and the development of psychiatric disorders and chronic diseases. **Objective:** the objective of the present study was to examine the relationship between ACEs, stress, and chronic diseases in older adults. **Methods:** This work was a cross-sectional study. We analyzed 450 participants aged 65 and older. To measure ACE, we used the ACE questionnaire that is a 10-item scale to measure the occurrence of a set of experiences during childhood and adolescence. In addition, the perceived stress scale was used as screening tool for stress. Logistic regression models were used to examine the associations between overall ACE score and individual ACE component scores and risk stress/comorbidities in adulthood after controlling for potential confounders. **Results:** the overall prevalence of perceived stress among older adults was 79.1%. Almost 76% of the sample reported being diagnosed with four or more chronic diseases. We found that the risk of stress increased in case of exposure to one-three ACEs (OR = 1.42, CI = [1.19–1.93]) and in case of experiencing at least four or more ACEs (OR = 1.43, CI = [1.23–1.82]). There was a statistical non-significant association between ACE exposure and the presence of chronic diseases. **Conclusion:** together our findings demonstrate clear links between ACEs and negative mental health outcomes. Future work will assess these issues in longitudinal studies to examine the long-term impact of ACEs on health outcomes. Physicians should be able to provide clinical interventions for trauma-focused care.
Palabras claves	Older adults, Adverse childhood experiences, Stress, Chronic diseases

Revista	**PLOS ONE**
ISSN	ISSN: 1932-6203
DOI	https://doi.org/10.1371/journal.pone.0299744
Título del Artículo	Affectation of COVID-19 pandemic on the use and abundance of wild resources in Tabasco, Mexico: A qualitative assessment
Autores e instituciones de adscripción	José Luis Martínez Sánchez [1]; Carolina Zequeira Larios [1]; Florisel Hernández Ramírez [1] [1] División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México
Resumen	Southern Mexico is particularly rich in natural resources, yet unemployment has risen to 8% during the COVID-19 pandemic. The effect of the pandemic on the use and abundance of Tabasco's wild resources was examined through personal surveys. By using Microsoft Forms® with cell phones 1,963 surveys were collected. Cronbach's alpha, Z-value, and chi^2 were calculated using the MAXQDA Analytics Pro program. A higher abundance of wild resources before the pandemic than today (57% vs. 11%) was observed. During the pandemic, people referred more to a high use (28%) of resources than to a low use (20%). This caused the low abundance or scarcity of wild products to be greater during the pandemic than before the pandemic (43% vs. 4%). Wild foods and timber were the most used products. The pandemic has produced a greater use of natural resources probably due to the high unemployment rate in rural areas. Future studies of wild products should address the relevant products in the locality and their even sampling. Finding suitable respondents is highly recommended.
Palabras claves	Mexico; Covid-19 Pandemic; Cronbach's Alpha; Unemployment Statistics Wild Foods; Cell Phones; Pose Estimation (Computer Vision)

Revista	**RESULTS IN ENGINEERING**
ISSN	2590-1230
DOI	https://doi.org/10.1016/j.rineng.2024.102915
Título del Artículo	Aging evaluation of fuse holders of BWR nuclear power plant
Autores e instituciones de adscripción	Alejandra Armenta-Molina [1] Luis Héctor Hernández-Gómez [1]Carlos Daniel Pascual-Hernández [1]; Daniel Villaseñor Chávez [2]; Gilberto Soto-Mendoza [3]; Brayan Leonardo Pérez-Escobar [4]; Tanya Nerina Arreola-Valles [1]; Salatiel Pérez-Montejo [5]

Autores e instituciones de adscripción	[1] Instituto Politécnico Nacional, Sección de Estudios de Posgrado e Investigación, Escuela Superior de Ingeniería Mecánica y Eléctrica, Unidad Zacatenco. Edificio 5, 2do piso, Unidad Profesional "Adolfo López Mateos", Colonia Lindavista, Alcaldía Gustavo A. Madero, C.P. 07738, Ciudad de México, Mexico [2] Universidad Rosario Castellanos, Unidad Azcapotzalco, Dirección de Asuntos Académicos, Licenciatura en Ingeniería en Control y Automatización, Claz. Lucio Blanco 11, Providencia, Azcapotzalco, 02440, Cuidad de México, CDMX, Mexico [3] Tecnológico Nacional de México. Tecnológico de Estudios Superiores de Jocotitlán. Department of Mechatronics Engineering, Toluca-Atlacomulco KM 44.8, Ejido de San Juan y San Agustín, Jocotitlán, 50700 Mexico [4] División Académica de Ingeniería y Arquitectura, Universidad Juárez Autónoma de Tabasco, Carretera Cunduacán-Jalpa de Méndez Kilómetro 1, La Esmeralda, 86690 Cunduacán, Tabasco, Mexico [5] Facultad de Ingeniería, Universidad Autónoma del Carmen, Campus III, Avenida Central S/N, Esq. con Fracc. Mundo Maya, C.P. 24115, Ciudad del Carmen, Campeche, Mexico
Resumen	The aging evaluation of a typical fuse holder, which is used in a BWR-5 nuclear plant, is discussed in this paper. This evaluation considered the guidelines of the NUREG-1760. A fuse holder, class R, has been considered. It has a wire gauge in the 500 kcmil – 4 Cu/Al range. It is used for a nominal current between 201 A and 400 A. It has 3 poles with a box-type terminal and a reinforcing clip, for blade-type fuses. The evaluation was carried out in two steps using the ANSYS® code. In the first, the operation of the fuse holder without aging was simulated. A three-dimensional model was used. The numerical solution requires the coupling of electrical, thermal, and mechanical analyses. It can be done with a single model. The mesh elements are Solid 232, Solid 291, and Solid 187. The model was refined at the clip holder and connector terminals. The model has 3,379,780 nodes and 2,387,463 elements. Its natural frequencies and the distribution of temperature, voltage, and stresses were obtained. The aging analysis was carried out in the second step after sixty years of operation. The loss of 1 mm in the thickness of the fastener, caused by corrosion or wear in the fuse assembly, was considered. The results showed that the vibration modes occurred with lower natural frequencies when inadequate contact occurred. Besides, changes in the other operating parameters were observed.
Palabras claves	Aging; Archard's wear; law Natural; frequencies; of a fuse holderCorrosion; of a fuse holder

Revista	**SALUD, CIENCIA Y TECNOLOGÍA**
ISSN	2796-9711
DOI	https://doi.org/10.56294/saludcyt2024794
Título del Artículo	Alcohol dependence and motivations for alcohol consumption in nursing students.
Autores e instituciones de adscripción	Castellanos Contreras, Edith [1]; Utrera-Romero, Johan David [1]; Salazar-Mendoza, Javier [2]; Enríquez Hernández, Claudia Beatriz [1]; Ortiz Vargas, Israel [1]; Conzatti Hernández, María Esperanza [2]; López Posadas, Jesús Radai [2]; González-Angulo, Pedro [3] [1] Universidad Veracruzana, Facultad de Enfermería, Región Veracruz. Veracruz, México. [2] Universidad Veracruzana, Facultad de Enfermería, Región Orizaba-Córdoba, Veracruz, México. [3] Universidad Juárez Autónoma de Tabasco, División Académica Multidisciplinaria de Jalpa de Méndez.
Resumen	**Introduction:** alcohol dependence is a public health problem on which multiple groups of researchers have focused their attention since it mainly affects the young population, as it is the most consumed drug in the world due to its easy access, which makes it imperative to advance in the understanding of this phenomenon. **Objective:** to determine the dependence and relationship that exists with the motivation to consume alcohol in nursing students. **Methods:** non-experimental, quantitative, descriptive, and cross-sectional research, in a sample of 363 undergraduate nursing students from two university regions, using simple random probability sampling, applying the Alcohol Use Disorders Identification Questionnaire (AUDIT) and the translation of the Drinking Motives Questionnaire-Revised (DMQ-R). **Results:** 47,4 % were 21 to 23 years old, 62,3 % were from urban areas; the largest number of students consumed occasionally (62,2 %) and 20,1 % were abstinent (women were the most frequent drinkers). The 97,2 % are motivated to consume alcohol and 0,3 % are highly motivated. **Conclusions:** there is dependence to alcohol consumption related to motivation in nursing students (rs=,697, p=<0,01). Therefore, it is necessary to implement interventions in prevention and health promotion, to limit access to the substance or reduce their intake patterns.
Palabras claves	Alcohol; Consumption; Dependence; Nursing; Student; Alcohol; Dependence.

Revista	**INTERNATIONAL JOURNAL OF EMERGENCY MEDICINE**
ISSN	1865-1380
DOI	https://doi.org/10.1186/s12245-024-00626-0
Título del Artículo	An AI-based multiphase framework for improving the mechanical ventilation availability in emergency departments during respiratory disease seasons: a case study
Autores e instituciones de adscripción	Miguel Ortiz-Barrios [1,2];Antonella Petrillo [3];Sebastián Arias-Fonseca [2];Sally McClean [4];Fabio de Felice [3];Chris Nugent [4];Sheyla-Ariany Uribe-López [5] [1] Centro de Investigación en Gestión e Ingeniería de Producción (CIGIP), Universitat Politecnica de Valencia, Camino de Vera, s/n, Valencia, 46022, Spain [2] Department of Productivity and Innovation, Universidad de la Costa CUC, Barranquilla, 080002, Colombia [2] Department of Engineering, University of Naples "Parthenope", Naples, Italy [3] Department of Productivity and Innovation, Universidad de la Costa CUC, Barranquilla, 080002, Colombia [4] School of Computing, Ulster University, Belfast, BT15 1ED, UK [5] Academic Multidisciplinary Division of Jalpa de Mendez, Juarez Autonomous University of Tabasco, Jalpa de Mendez, Tabasco, Mexico
Resumen	**Background** Shortages of mechanical ventilation have become a constant problem in Emergency Departments (EDs), thereby affecting the timely deployment of medical interventions that counteract the severe health complications experienced during respiratory disease seasons. It is then necessary to count on agile and robust methodological approaches predicting the expected demand loads to EDs while supporting the timely allocation of ventilators. In this paper, we propose an integration of Artificial Intelligence (AI) and Discrete-event Simulation (DES) to design effective interventions ensuring the high availability of ventilators for patients needing these devices. **Methods** First, we applied Random Forest (RF) to estimate the mechanical ventilation probability of respiratoryaffected patients entering the emergency wards. Second, we introduced the RF predictions into a DES model to diagnose the response of EDs in terms of mechanical ventilator availability. Lately, we pretested two different interventions suggested by decision-makers to address the scarcity of this resource. A case study in a European hospital group was used to validate the proposed methodology. **Results** The number of patients in the training cohort was 734, while the test group comprised 315. The sensitivity of the AI model was 93.08% (95% confidence interval, [88.46 −96.26%]), whilst the specificity was 85.45% [77.45 −91.45%]. On the other hand, the positive and negative predictive values were 91.62% (86.75 −95.13%) and 87.85% (80.12 −93.36%). Also, the Receiver Operator Characteristic (ROC) curve plot was 95.00% (89.25 −100%). Finally, the median waiting time for mechanical ventilation was decreased by 17.48% after implementing a new resource capacity strategy. **Conclusions** Combining AI and DES helps healthcare decision-makers to elucidate interventions shortening the waiting times for mechanical ventilators in EDs during respiratory disease epidemics and pandemics.
Palabras claves	Artificial Intelligence (AI); Random Forest (RF); Discrete-Event-Simulation (DES); Emergency Department (ED); Mechanical ventilation; Healthcare

Revista	**HYDROLOGY RESEARCH**
ISSN	0029-1277
DOI	https://doi.org/10.2166/nh.2024.111
Título del Artículo	Analysis of scaling relationships for flood parameters and peak discharge estimation in a tropical region
Autores e instituciones de adscripción	Charles Mazivanhanga [1];Robert C. Grabowski [1];Eunice Pérez-Sánchez [2]; Victor R. Carballo-Cruz [2] [1] School of Water Energy and Environment, Cranfield University, Bedford, United Kingdom [2] División Académica de Ciencias Biológicas, Universidad Juarez Autonoma de Tabasco, Tabasco, Mexico
Resumen	Relationships between peak discharges and catchment size (e.g., flood scaling) in a catchment have the potential to support new river flood forecasting approaches but have not been tested in tropical regions. This study determined flood scaling relationships between peak discharge and nested drainage areas in the La Sierra catchment (Mexico). A statistical power

Resumen	law equation was applied to selected rainfall–runoff events that occurred between 2012 and 2015. Variations in flood scaling parameters were determined in relation to catchment descriptors and processes for peak downstream discharge estimation. Similar to studies in humid temperate regions, the results reveal the existence of log-linear relationships between the intercept (α) and exponent (θ) parameter values and the log–log power–law relationships between (α) and the peak discharge observed from the smallest headwater catchments. The flood parameter values obtained were then factored into the scaling equation ($QP = \alpha A\theta$) and successfully predicted downstream flood peaks, especially highly recurrent flood events. The findings contribute to a better understanding of the nature of flood wave generation and support the development of new flood forecasting approaches in unregulated catchments suitable for non-stationarity in hydrological processes with climate change.
Palabras claves	Catchment, flood forecasting, flood peak, hydrological scaling, rainfall event, streamflow response

Revista	**JOURNAL OF SENSORY STUDIES**
ISSN	0887-8250
DOI	https://doi.org/10.1111/joss.12920
Título del Artículo	Analysis of sensory and cognitive performance of generational consumers using artisan tortillas
Autores e instituciones de adscripción	Adán Cabal-Prieto [1]; José Andrés Herrera-Corredor [2]; María Isabel Vega-Carreño [1]; Alfonso Juventino Chay-Canul [3]; Berenice Chareo-Benítez [4]; José Manuel Juárez-Barrientos [4]; Gregorio Hernández-Salinas [5]; Cristal Arany Guerrero-Ortíz [5]; Jorge Armida-Lozano [5]; Emmanuel de Jesús Ramírez-Rivera [5] [1] Maestría en Ingeniería, Tecnológico Nacional de México, Campus Huatusco, Veracruz, Mexico [2] Postgrado en Innovación Agroalimentaria Sustentable, Colegio de Postgraduados, Campus Córdoba, Veracruz, Mexico [3] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Villahermosa, Mexico [4] Laboratorio de Bioquímica y mejoramiento genetico, Ciencias Agropecuarias, Universidad del Papaloapan Campus Loma Bonita, Oaxaca, Mexico [5] Innovación Agrícola Sustentable, Tecnológico Nacional de México, Campus Zongolica, Veracruz, Mexico
Resumen	The objective of this research was to compare the sensory and cognitive performance of generations of consumers using artisanal tortillas. Four groups of generational consumers were evaluated (baby boomers, generation X, Y, and Z; $n = 100$ consumers per generational group). Three experiments were conducted: (1) use of the intensity scale, (2) determination of dominant attributes via TDS and (3) elicited emotions and memories. The results of the first experiment showed that baby boomers, generation X and Y had the best performance in terms of discrimination and consensus. The second experiment demonstrated that generation Z consumers identified dominant attributes of texture in mouth and the other generations identified corn flavor, nixtamal flavor, and sour taste attributes as dominant. Regarding the evaluation of emotions and memories, it was observed that as generations progress, more emotions, and memories were used. In this sense, generation Z was the one that used the most negative emotions and memories. **Practical Applications** Analyzing the generational effect can help researchers and tortilla manufacturers to the selection of generational consumer for the evaluation of artisanal, cross-cultural, or industrialized foods.
Palabras claves	N/A

Revista	**ANIMALS**
ISSN	eISSN 2076-2615
DOI	https://doi.org/10.3390/ani14071066
Título del Artículo	Anatomy and Physiology of Water Buffalo Mammary Glands: An Anatomofunctional Comparison with Dairy Cattle
Autores e instituciones de adscripción	Daniel Mota-Rojas [1]; Fabio Napolitano [2]; Alfonso Chay-Canul [3]; Marcelo Ghezzi [4]; Ada Braghieri [2]; Adriana Domínguez-Oliva [1]; Andrea Bragaglio [5]; Adolfo Álvarez-Macías [1]; Adriana Olmos-Hernández [6]; Giuseppe De Rosa [7]; Ricardo García-Herrera [3]; Pamela Lendez [8]; Corrado Pacelli [2]; Aldo Bertoni [1]; andVittoria Lucia Barile [9]

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Resumen	The present review aims to analyze the anatomical and physiological characteristics of the mammary gland and udders of water buffalo by making an anatomofunctional comparison with dairy cattle. It will also discuss the knowledge generated around the physiological regulation of milk ejection in the water buffalo. It was found that buffalo's average udder depth and width is approximately 20 cm smaller than *Bos* cattle. One of the main differences with dairy cattle is a longer teat canal length (around 8.25–11.56 cm), which highly influences buffalo milking. In this sense, a narrower teat canal (2.71 ± 0.10 cm) and thicker sphincter muscle are associated with needing higher vacuum levels when using machine milking in buffalo. Moreover, the predominant alveolar fraction of water buffalo storing 90–95% of the entire milk production is another element that can be related to the lower milk yields in buffalo (when compared to *Bos* cattle) and the requirements for prolonged prestimulation in this species. Considering the anatomical characteristics of water buffalo's udder could help improve bubaline dairy systems.
Palabras claves	Udder morphology; *Bubalus bubalis*; prestimulation

Revista	**ANTI-CANCER AGENTS IN MEDICINAL CHEMISTRY**
ISSN	1871-5206
DOI	https://doi.org/10.2174/0118715206282983240215050314
Título del Artículo	Anticancer Activity of *Sargassum fluitans* Extracts in Different Cancer Cells
Autores e instituciones de adscripción	José Arnold González-Garrido [1]; Javier Alejandro Gómez-García [1]; Oswaldo Ignacio Hernández-Abreu [1]; Ivonne María Olivares-Corichi [2]; Fernando Pereyra-Vergara [2]; José Rubén García-Sánchez [2] [1] Centro de Investigación de Ciencia y Tecnología Aplicada de Tabasco (CICTAT), División Académica de Ciencias Básicas. Laboratorio de Bioquímica y Biología molecular, Universidad Juárez Autónoma de Tabasco, Carretera Cunduacán-Jalpa KM. 1 Colonia la Esmeralda, Tabasco, C.P. 86690, México. [2] Sección de Estudios de Posgrado e Investigación, Escuela Superior de Medicina del Instituto Politécnico Nacional. Laboratorio de Oncología Molecular y Estrés Oxidativo, Instituto Politécnico Nacional, Plan de San Luis y Díaz Mirón, C.P. 11340, CDMX, México.
Resumen	**Background:** The arrival of large quantities of *Sargassum* in the Mexican Caribbean Sea has generated major environmental, health and economic problems. Although *Sargassum* has been used in the generation of some commercial products, few studies have described its possible applications as a source of compounds with anticancer activity. **Objective:** This study aimed to evaluate the antiproliferative effects of different *Sargassum* extracts on various cancer cell lines. Furthermore, LC/QTOF-MS was used to identify the compounds related to the antiproliferative effect. **Methods:** First, determination of the seaweed was performed, and dichloromethane, chloroform and methanol extracts were obtained. The extracts were evaluated for their antiproliferative effects by MTT in breast (MDAMB- 231 and MCF-7), prostate (DU-145), lung (A549) and cervical (SiHa) cancer cell lines. Finally, LC/QTOFMS identified the compounds related to the antiproliferative effect. **Results:** The authentication showed *Sargassum fluitans* as the predominant species. The extracts of dichloromethane and chloroform showed an antiproliferative effect. Interestingly, the fractionation of the chloroform extract showed two fractions (FC1 and FC2) with antiproliferative activity in MDA-MB-231, SiHa and A549 cancer cell lines. On the other hand, three fractions of dichloromethane extract (FD1, FD4 and FD5) also showed antiproliferative effects in the MDA-MB-231, MCF-7, SiHa and DU-145 cancer cell lines. Furthermore, LC/QTOF-MS

Resumen	revealed the presence of eight major compounds in FC2. Three compounds with evidence of anticancer activity were identified (D-linalool-3-glucoside, (3R,4S,6E,10Z)-3,4,7,11-tetramethyl-6,10 tridecadienal and alpha-tocotrienol). **Conclusion:** These findings showed that *Sargassum fluitans* extracts are a possible source of therapeutic agents against cancer and could act as scaffolds for new drug discovery.
Palabras claves	Antiproliferation; LC/QTOF-MS; *Sargassum fluitans*; antiproliferative effect.; cancer; caribbean sea.

Revista	**NANOMATERIALS**
ISSN	eISSN: 2079-4991
DOI	https://doi.org/10.3390/nano14121007
Título del Artículo	Antifungal Activity of ZnO Nanoparticles Synthesized from *Eichhornia crassipes* Extract for Construction Applications
Autores e instituciones de adscripción	Rocío Vargas Hernández [1,2]; Mayra A. Alvarez Lemus [2]; Susana de la Rosa García [3]; Rosendo López González [2]; Patricia Quintana [4]; David García Zaleta [1]; Viridiana Velázquez Vázquez [2]; Sergio Gómez Cornelio [2,5,] [1] Multidisciplinary Academic Division of Jalpa de Méndez, Juarez Autonomous University of Tabasco, Jalpa de Méndez 86205, Tabasco, Mexico [2] Nanotechnology Laboratory, Academic Division of Engineering and Architecture, Juarez Autonomous University of Tabasco, Cunduacán 86690, Tabasco, Mexico [3] Laboratory of Applied Microbiology, Academic Division of Biological Sciences, Juarez Autonomous University of Tabasco, Villahermosa 86000, Tabasco, Mexico [4] National Laboratory of Nano and Biomaterials, Department of Applied Physics, CINVESTAV-IPN, Cordemex, P.O. Box 73, Mérida 97310, Yucatán, Mexico [5] Biotechnology Laboratory, Polytechnic University of the Center, Centro 86290, Tabasco, Mexico
Resumen	Fungal growth on construction materials in tropical climates can degrade aesthetics and manifestations on modern and historical sick buildings, affecting the health of their inhabitants. This study synthesized ZnO nanoparticles with enhanced antifungal properties using a precipitation method. Different concentrations (25%, 50%, and 100%) of *Eichhornia crassipes* aqueous extract were used with $Zn(NO_3)_2 \cdot 6H_2O$ as the precursor to evaluate their spectroscopic, morphological, textural, and antifungal properties. X-ray diffraction confirmed the hexagonal wurtzite phase of ZnO with crystallite sizes up to 20 nm. Fourier-transform infrared spectroscopy identified absorption bands at 426, 503, and 567 cm^{-1} for ZnO-100, ZnO-50, and ZnO-25, respectively. Nitrogen physisorption indicated a type II isotherm with macropores and a fractal dimension coefficient near 2 across all concentrations. Polydispersity index analysis showed that ZnO-50 had a higher PDI, indicating a broader size distribution, while ZnO-25 and ZnO-100 exhibited lower PDI values, reflecting uniform and monodisperse particle sizes. FESEM observations revealed semi-spherical ZnO morphologies prone to agglomeration, particularly in ZnO-25. Antifungal tests highlighted ZnO-25 as the most effective, especially against *Phoma* sp. with an MFC/MIC ratio of 78 µg/mL. Poisoned plate assays demonstrated over 50% inhibition at 312 µg/mL for all tested fungi, outperforming commercial antifungals. The results indicate that ZnO NPs synthesized using *E. crassipes* extract effectively inhibit fungal growth on construction materials. This procedure offers a practical approach to improving the durability of building aesthetics and may contribute to reducing the health risks associated with exposure to fungal compounds.
Palabras claves	Sick building syndrome; fungicidal properties; bio-assisted synthesis; MIC/MFC ratios; construction materials

Revista	**REVISTA ELECTRÓNICA DE INVESTIGACIÓN EDUCATIVA**
ISSN	1607-4041
DOI	https://doi.org/10.24320/redie.2024.26.e05.6038
Título del Artículo	Application of Web 2.0 to Reduce Failure in English

Autores e instituciones de adscripción	Pineda Castillo, Kristian Armando [1]; Jerónimo Yedra, Rubén [2] [1] Universidad Pedagógica del Estado de Sinaloa [2] Universidad Juárez Autónoma de Tabasco
Resumen	The purpose of the intervention was to reduce the failure rate in English with the help of a website built to support the learning experience. Action research was employed in a mixed-methods approach with an exploratory sequential design. Techniques such as documentary analysis, semistructured interviews, and participant observation were employed with 255 high schoolers. Findings revealed that the website, together with follow-up from the teacher-researchers, helped most students achieve a passing grade, empowered the learning experience, and enhanced communicative competence and linguistic awareness. Additionally, the website's user-friendly nature and well-suited interface simplified the learning dynamic. Furthermore, according to website data, this digital space was also used in other settings with similar objectives. Even so, apathy remained a problem as some learners chose not to take part in the strategy and did not pass. We believe that the research contributes to the state of the art and generates knowledge, especially given the lack of research addressing failure in language education.
Palabras claves	Educational innovation; linguistic research; educational sciences; foreign language

Revista	**JOURNAL OF ARCHAEOLOGICAL SCIENCE: REPORTS**
ISSN	2352-4103
DOI	https://doi.org/10.1016/j.jasrep.2024.104458
Título del Artículo	Archaeometric study of Maya pottery from Comalcalco, Tabasco, Mexico
Autores e instituciones de adscripción	Susana Chávez-Cruz [1]; Miriam J. Gallegos-Gómora [2]; Ricardo Armijo-Torres [2]; Mario A. Guzmán-Cruz [3]; Richart Falconi-Calderón [4]; Manuel Acosta-Alejandro [4] [1] Universidad Mundo Maya, Carr. Villahermosa-Buenavista km 4.5, Miguel Hidalgo, Villahermosa, Tabasco 86126, México [2] Instituto Nacional de Antropología e Historia, Centro INAH Tabasco, Plutarco Elías Calles No. 401, Col. Jesús García, Tabasco 86040, México [3] División Académica Multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, Carr. Villahermosa-Comalcalco km 27, Jalpa de Méndez, Tabasco 86205, México [4] División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, km 1.5 Carr. Cunduacán - Jalpa de Méndez, Cunduacán, Tabasco 86690, México
Resumen	In this paper, structural, morphological, and mineralogical characterizations of Maya archaeological pottery from Comalcalco, Tabasco, Mexico are presented. The fired clay ceramic samples were taken from Maya settlements, previously classified in traditional way, using the type-variety method from physical and cultural features. It is shown that the ceramics studied have some similarities and differences, indicating that the classification by type-variety must be complemented with physicochemical characterization techniques to issue more compelling proposals about Maya ceramics. Physicochemical analysis revealed that the raw materials used by ceramic groups to manufacture different types of pottery such as vases, cups, incense burners and pots have the same composition and origin than the raw materials located in the surrounded region of the archaeological site. Quite similar mineralogical compositions were found between the various studied ceramic materials which indicate a great knowledge of the manufactured materials type. However, significant differences in fired temperatures and carbon concentration were observed which may be related to type of materials used as fuel (organic materials) and whether such ceramics were fired in open or pit ovens.
Palabras claves	N/A

Revista	**REMOTE SENSING**
ISSN	eISSN:2072-4292
DOI	https://doi.org/10.3390/rs16142596
Título del Artículo	Assessment of PERSIANN Satellite Products over the Tulijá River Basin, Mexico

Autores e instituciones de adscripción	Lorenza Ceferino-Hernández [1]; Francisco Magaña Hernández [2]; Enrique Campos-Campos [2]; Gabriela Adina Morosanu [3]; Carlos E. Torres-Aguilar [2]; René Sebastián Mora-Ortiz [2]; Sergio A. Díaz [2] [1] Instituto Interamericano de Tecnología y Ciencias del Agua, Universidad Autónoma del Estado de México, km 14.5 Carretera Toluca-Ixtlahuaca, Estado de México 50200, Mexico [2] División Académica de Ingeniería y Arquitectura (DAIA), Universidad Juárez Autónoma de Tabasco, Carretera Cunduacán-Jalpa de Méndez km. 1, Cunduacán 86690, Mexico [3] Institute of Geography of the Romanian Academy, 12 Dimitrie Racoviță, Sector 6, 032993 Bucharest, Romania
Resumen	Precipitation is a fundamental component of the Earth's hydrological cycle. Therefore, monitoring precipitation is paramount, as accurate information is needed to prevent natural hydrological disasters, such as floods and droughts. However, measuring precipitation using rain gauges is complicated due to their sparse spatial distribution. Satellite precipitation products (SPPs) are an alternative source of rainfall data. This study aimed to evaluate the performance of PERSIANN-CCS and PDIR-Now SPPs over the Tulijá River Basin (Chiapas, Mexico) using scatter plots, categorical statistics, descriptive statistics, and decomposing total bias. Additionally, bias correction was performed using the quantile mapping (QM) method. QM is a technique used to improve the fit of SPPs with respect to rainfall observations through a transfer function, aiming to reduce systematic errors in SPPs. The results indicate that the PDIR-Now product tends to overestimate rainfall to a large extent, thus showing better performance in detecting rain events. Meanwhile, PERSIANN-CCS underestimates precipitation to a lesser extent. The findings of this study demonstrate that correcting the bias of SPPs improves estimations of rainfall records, thereby reducing the percentage bias and root mean square error.
Palabras claves	PERSIANN-CCS; PDIR-Now; bias correction; quantile mapping; Tulijá River Basin

Revista	**REVISTA BRASILEIRA DE GEOMORFOLOGÍA**
ISSN	eISSN:2236-5664
DOI	https://doi.org/10.20502/rbgeomorfologia.v25i3.2547
Título del Artículo	Assessment of the morphometric characteristics of the sub-basins of the Grijalva-Villahermosa Hydrological Region in southeastern Mexico.
Autores e instituciones de adscripción	Ojilve Ramón Medrano Pérez [1]; Lucia Sanaphre-Villanueva [1]; María José Juárez-Rodríguez [2] [1] CONAHCYT-Centro del Cambio Global y la Sustentabilidad [2] División Académica de Ciencias Básicas (DACB), Universidad Juárez Autónoma de Tabasco (UJAT)
Resumen	Morphometric analysis of watersheds is key to identifying and establishing comparisons between geomorphological, topographical, morphodynamical, and hydrological characteristics in watersheds with limited climatic information. Recurrent flood events and vulnerability to related adverse effects have characterized southeastern Mexico. The main goal of the research is to evaluate the statistical relationships of 12 morphometric parameters and examine their significance for grouping sub-basins with similar morphometric characteristics, to analyze the homogeneity in morphodynamical and hydrologic behavior of the 26 sub-basins of the Grijalva-Villahermosa Hydrological Region (RH30D), in southeastern Mexico. The results revealed four distinct sub-basin groups. Group 1 showed positive correlations with efficient drainage patterns, while group 4 was associated with heavy floods and large flows. Although groups 2 and 3 presented values close to the mean for most parameters, differences were observed in having inverse values for Bifurcation ratio (Br) and Stream Frequency (Fs). Furthermore, group 3 presented drainage patterns controlled by geological structures (high Br values), while group 2 showed a high number of streams per unit area, from which faster hydrological responses are inferred. This study seeks to contribute to knowledge, research, and decision-making on related topics.
Palabras claves	Geomorphology, basins, morphometric, statistical analysis, clustering

Revista	**HEALTHCARE SWITZERLAND**
ISSN	eISSN;2227-9032
DOI	https://doi.org/10.3390/healthcare12141368
Título del Artículo	Association of Overweight and Obesity with Impaired Executive Functioning in Mexican Adolescents: The Importance of Inhibitory Control
Autores e instituciones de adscripción	Yatzeny Guadalupe Ruiz-Molina [1]; Josué Herrera-Ávila [1], Josué Vidal Espinosa-Juárez [2]; Héctor Armando Esquinca-Avilés [2]; Juan Gabriel Tejas-Juárez [3]; Elena Flores-Guillén [4]; Luis Alberto Morales-Martínez [4]; Alfredo Briones-Aranda [5]; Betsabé Jiménez-Ceballos [6] José Alfredo Sierra-Ramírez [1] and Refugio Cruz-Trujillo [2,7] [1] Sección de Estudios de Posgrado e Investigación, Escuela Superior de Medicina, Instituto Politécnico Nacional, Ciudad de Mexico 11340, Mexico [2] Escuela de Ciencias Químicas, Universidad Autónoma de Chiapas (UNACH), Carretera Panamericana Ocozocoautla-Cintalapa Km. 2.5, Ocozocoautla de Espinosa 29140, Mexico [3] División Académica Multidisciplinaria de Comalcalco, Universidad Juárez Autónoma de Tabasco, Tabasco 86658, Mexico [4] Facultad de Ciencias de la Nutrición y Alimentos, Universidad de Ciencias y Artes de Chiapas (UNICACH), Libramiento Norte-Poniente 1150, Col. Lajas Maciel, Tuxtla Gutiérrez 29039, Mexico [5] Facultad de Medicina Humana Campus II, Universidad Autónoma de Chiapas (UNACH), Décima Sur esquina Calle Central S/N, Tuxtla Gutiérrez 29050, Mexico [6] Clínica de Trastornos del Sueño, Universidad Autónoma Metropolitana, Unidad Iztapalapa (UAM-I), Av. San Rafael Atlixco 185, Col. Leyes de Reforma, Iztapalapa, Ciudad de Mexico 09340, Mexico [7] Departamento de Químicos Farmacobiólogos, Universidad Pablo Guardado Chávez (UPGCH), Libramiento Norte Oriente No. 3450, Tuxtla Gutiérrez 29040, Mexico
Resumen	Overweight and obesity are major public health issues worldwide, including in Mexico, particularly among adolescents. This study aimed to analyze the associations between nutritional status and impaired executive function (EF) in Mexican adolescents. A case–control study was conducted with 98 male and female adolescents, categorized into normal weight and overweight/obese groups based on body mass index. EF was assessed using the BANFE-2 test. The prevalence of overweight and obesity was 54.3%. The EF assessment revealed that 82.45% of the overweight/obese group exhibited mild-to-severe impairment, compared to only 36.58% in the normal weight group ($X^2 = 21.69$, $p < 0.0001$). In the inhibitory control assessment, adolescents with overweight and obesity performed worse than their normal-weight counterparts. Specifically, females with overweight/obesity scored lower than females with normal weight on the risk–benefit processing test. The risk of severe EF impairment significantly increased with the presence of overweight/obesity (OR = 7.8, $p < 0.0001$). These findings indicate that EF, particularly inhibitory control and risk–benefit processing, is impaired in adolescents with overweight or obesity.
Palabras claves	Adolescence; executive function; inhibitory control; obesity; overweight; orbitomedial cortex; physical activity

Revista	**COMMUNICATIONS IN STATISTICS-SIMULATION AND COMPUTATION**
ISSN	0361-0918
DOI	https://doi.org/10.1080/03610918.2024.2347923
Título del Artículo	Asymptotic behavior of some multicategory classification methods for high-dimensional data
Autores e instituciones de adscripción	Dorilian García-Cerino [1]; Addy Bolívar Cimé [1]; Víctor Pérez-Abreu [2] [1] División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Cunduacán, Mexico [2] Guanajuato, Mexico
Resumen	We consider multicategory extensions of binary discrimination methods *via* one-versus-one (OVO) or one-versus-rest (OVR) methodologies, focusing on extensions of the binary classification by linear mean difference (MD), support vector machine (SVM), maximal data piling (MDP), and distance weighted discrimination (DWD) *via* OVO, and the multicategory extension of MD *via* OVR, in the context of high-dimensional and low sample size (HDLSS) data. The asymptotic behavior of OVO-MD, OVO-SVM, OVO-MDP and OVO-DWD is described when the dimension of the data increases and the sample size is fixed, in terms of the probabilities of correct classification of a new data point, finding sufficient conditions for the correct classification probabilities to converge to one as the dimension approaches infinity. As in the binary case, OVO-MD, OVO-SVM and OVO- MDP have the same asymptotic behavior while OVO-DWD could behave

Resumen	differently. We also consider the asymptotic behavior of the OVR-MD methodology providing necessary and sufficient conditions for a new data point of a given class to be correctly classified with probability tending to one. A simulation experiment is conducted to further compare the methodologies, and consider the four binary methods in the OVR case. We evaluate the performance of the considered methods using a microarray data set.
Palabras claves	High-dimension; Low-sample size data: Multicategory discrimination; One-versus-one; One-versus-rest; Support vector machine

Revista	**ENFERMEDADES INFECCIOSAS Y MICROBIOLOGÍA**
ISSN	1578-1852
URL	https://www.medigraphic.com/cgi-bin/new/resumenI.cgi?IDARTICULO=118058
Título del Artículo	BCG vaccination in México pandemic: serious, fatal cases of Covid-19 in health workers, and loved ones
Autores e instituciones de adscripción	Sánchez Barragán, Baldomero [1]; Martínez Torres, Maritza [2]; Córdova Hernández, Juan A. [1]; Dzul Rosado, Karla R. [3]; Lavín Sánchez, Dayana G. [1] Ramírez Roque, Karla Y. [1] Martínez Gutiérrez, Erick [1] [1] División Académica de Ciencias de la Salud, Universidad Juárez Autónoma de Tabasco [2] Servicio de Pediatría, Hospital Regional Pemex Villahermosa [3] Facultad de Medicina, Facultad de Química y Centro de Investigaciones Regionales Dr. Hideyo Noguchi, Universidad Autónoma de Yucatán, Mérida
Resumen	**Background:** The vaccination with BCG has been relationed with a posible heterology against serious and fatal cases for differents germs, incluid SARS-COV-2, trought input immunity. Our proposit was determined this possible protection. **Materials and methods:** Quasi-experimental study, in health employers, relatives and people related, final population 739 people between 20-85 years old, average 52 years old; 177 with aplication of BCG in pandemic (group 1) and 562 without BCG (group 2), both with 2.02 average serious-fatal conditions for COVID-19, with same risks; in first seven months of pandemic in Mexico. Concluding follow-up November 23, 2020. Analysis of variables, it was made with risk-relative measurement: TDI for ten thousand SPS, RDI, RR and significance: χ^2M-H 95-99%, IC 95%. **Results:** Between 20-59 years old, TDI of serious, fatales cases of COVID-19 is 5.36 and 17.39 (χ^2p ‹0.01, IC p ‹0.05) group 1, group 2 respectively. Between 60-85 years old TDI was 20.33 and 23.67 (χ^2p ‹0.01, IC p ›0.05) group 1, group 2 respectively. Global tdi was 10.09 and 19.41 (χ^2p ‹0.01, IC p ‹0.05) group 1, group 2 respectively. **Conclusions:** BCG vaccination in a pandemic has a high probability of reducing the risk of severity and fatality from COVID-19. However, they share comorbidities with a poor prognosis, suggesting possible protection.
Palabras claves	Vaccine BCG, serious, fatality, COVID-19.

Revista	**TERRA LATINOAMERICANA**
ISSN	2395-8030
DOI	https://doi.org/10.28940/terra.v42i0.1831
Título del Artículo	Biofortification of Verdín Beans (*Phaseolus vulgaris L.*) With Chelate and Iron Sulfate
Autores e instituciones de adscripción	Jean W. Félix [1]; Esteban Sánchez-Chávez [2]; Oscar Tosquy-Valle [3]; Pablo Preciado-Rangel [4]; Cesar Márquez-Quiroz [1]; Efraín de la Cruz-Lázaro [1] [1]Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias Agropecuarias. Carretera Villahermosa-Teapa km 25. 86280 Villahermosa, Tabasco, México; (J.W.F.), (C.M.Q.), (E.C.L.). [2] Centro de Investigación en Alimentación y Desarrollo, A.C. Avenida Cuarta Sur No. 3820, Fraccionamiento Vencedores del Desierto. 33089 delicias, Chihuahua, México; (E.S.Ch.). [3] Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias. CIRGOC-CE Cotaxtla. Carretera Federal Veracruz-Córdoba km 34.5. 94270 Medellín de Bravo, Veracruz, México; (O.T.V.) [4] Instituto Tecnológico de Torreón. Carretera Torreón-San Pedro km 7.5, Ejido Ana. 27170 Torreón, Coahuila, México; (P.P.R.).

Resumen	Biofortification is a process that increases the nutrient content in plants' edible parts. The objective was to determine the effect of iron chelate and iron sulfathe applied through foliar and edaphic methods on the mineral, nutritional, and bioactive compound content of the Verdin bean grain. Foliar doses of 0, 25, 50 and 100 mM of iron chelate and edaphic doses of 0, 0.25 and 0.50 g per plant of iron sulfate were applied, which generated 12 treatments that were evaluated in a randomized block design in 4×3 factorial arrangement where the first factor was the foliar doses, and the second factor was the edaphic doses. The content of iron, zinc, manganese, nickel, calcium and potassium, ash, proteins, fats, fiber, total phenols, flavonoid, anthocyanins, and antioxidant capacity were determined in the grain. The individual applications of foliar and edaphic iron had significant effects ($P \leq 0.05$), with the edaphic dose of 0.50 g presenting the greatest increases in iron (17.38%), nickel (20.69%), protein (10.93%), crude fiber (5.82%) and antioxidant capacity (2.84%) regarding doses without edaphic iron. The simultaneous application of edaphic and foliar iron showed statistical differences ($P \leq 0.05$), presenting the greatest increase in iron (75.91%), nickel (30.61%), ash (114.69%), protein (18.14%) and crude fiber (15.34%) with the 100 mM foliar - 0.50 g edaphic combination regarding to the combination without iron. For individual and simultaneous iron applications, it was observed that increasing the foliar and edaphic doses had antagonistic effects on the zinc and fat content. The application of iron can be beneficial to increase the mineral and nutritional content, and some bioactive compounds, but care must be taken to minimize the negative effects on other nutrients and properties of the grain.
Palabras claves	Antioxidant activity, bioactive compounds, total phenols

Revista	**PHYSICAL CHEMISTRY CHEMICAL PHYSICS**
ISSN	1463-9076
DOI	https://doi.org/10.1039/D4CP00029C
Título del Artículo	Breaking the plane: B_5H_5 is a three-dimensional structure
Autores e instituciones de adscripción	Gerardo Hernández-Juárez [1]; Jorge Barroso [2]; Alejandro Vásquez-Espinal [3]; Filiberto Ortiz-Chi [4]; William Tiznado [5]; Fernando Murillo [1]; Gabriel Merino [1] [1] Departamento de Física Aplicada, Centro de Investigación y de Estudios Avanzados, Unidad Mérida. Km 6 Antigua Carretera a Progreso. Apdo. Postal 73, Cordemex, 97310, Mérida, Yuc., Mexico. [2] Department of Chemistry, Clemson University, Clemson, South Carolina 29625, USA [3] Química y Farmacia, Facultad de Ciencias de la Salud, Universidad Arturo Prat, Casilla 121, Iquique 1100000, Chile [4] CONAHCYT-División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Cunduacán 86690, Tabasco, Mexico [5] Departamento de Ciencias Químicas, Facultad de Ciencias Exactas, Universidad Andres Bello, República 498, Santiago, Chile
Resumen	In this study, we delved into the structure of B_5H_5 and questioned some of its accepted assumptions. By exploring the potential energy surface, we found a new three-dimensional structure as the global minimum. This finding is in contrast with the previously hypothesized planar and cage-like models. Our exploration extends to the kinetic stability of various B_5H_5 isomers, offering insights into the dynamic behavior of these molecules.
Palabras claves	N/A

Revista	**RISTI REVISTA IBERICA DE SISTEMAS E TECNOLOGIAS DE INFORMACAO**
ISSN	1646-9895
URL	https://www.risti.xyz/issues/ristie70.pdf
Páginas	342-355
Título del Artículo	Business intelligence, decision making and competitiveness in companies in Villahermosa, Mexico
Autores e instituciones de adscripción	David Elías Pérez Jesús [1]; Gerardo Arceo Moheno [1]; Guillermo de los Santos Torres [1]; Eric Ramos Méndez [1] [1] Universidad Juárez Autónoma de Tabasco

Resumen	Business intelligence is a set of technologies (Data Warehouse, Data mart), methodologies (Agile, Lean) and tools (Dashboard, ERP) that help companies stay competitive. The objective of this work is to show business intelligence information systems for strategic decision making as a factor of competitiveness in commercial SMEs in Villahermosa, Mexico. Using a 4-step methodological procedure. It is quantitative and the study was exploratory and descriptive. The questionnaire was used, which is made up of 4 blocks with 57 questions, applying it to 29 directors and/or managers. One of the main findings was that investment in these technologies was not so relevant, that is, it has not increased drastically in the last five years. The above shows that a lot of work is needed to learn how to use these systems and make strategic decisions with them to improve competitiveness.
Palabras claves	Decision making; information technology; business intelligence; small and medium businesses.

Revista	**CIENCIA RURAL**
ISSN	1678-4596
DOI	http://doi.org/10.1590/0103-8478cr20240015
Título del Artículo	Can body volume predict of body weight in Pelibuey ewe lambs?
Autores e instituciones de adscripción	Ignacio Vázquez–Martínez [1]; Aldenamar Cruz-Hernández [1]; Armando Gómez-Vázquez [1]; Rodolfo Osorio-Osorio [1]; Efraín de la Cruz-Lázaro [1]; Antonio Leandro Chaves Gurgel [2]; Tairon Pannunzio Dias-Silva [2]; Ricardo García-Herrera [1]; Alfonso Juventino Chay-Canul [1] [1] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, 86280, Colonia Centro Tabasco, México [2] Universidade Federal do Piauí (UFPI), Bom Jesus, PI, Brasil.
Resumen	In traditional sheep production systems in tropical regions, the evaluation and monitoring of animal growth are not commonly practiced. This is primarily attributed to the limited adoption of technology and the high costs associated with acquiring livestock scales. The present study developed equations to predict body weight of Pelibuey ewe lambs using a Body Volume (BV) formula. BW and BV were obtained from 85 ewe lambs. The models evaluated were as follows: 1) linear, 2) quadratic, 3) cubic, 4) allometric, 5) exponential and 6) logarithmic. In addition, the models' predictive ability for BW was assessed by k-fold (k=10) cross-validation. The BW and BV were 20.60 ± 8.73 kg and 17.54 ± 7.89 dm^3, respectively. The quadratic model showed the highest r^2 and the lowest values of mean square error, root mean square error, and bayesian information criterion, while the k-fold cross-validation technique also had the highest r^2 and the lowest values of mean squared prediction error and mean absolute error. The quadratic model was the best performing mathematical model for predicting BW of growing Pelibuey ewe lambs using BV.
Palabras claves	Body weight estimation; Pelibuey ewe lambs; mathematical models; regression models

Revista	**REVISTA DE GESTAO SOCIAL E AMBIENTAL**
ISSN	1981-982X
DOI	https://doi.org/10.24857/rgsa.v18n1-154
Título del Artículo	Canadian Aculturation of Graduates and Teachers of the Bachelors Degree in Languages from a University in Southeast Mexican
Autores e instituciones de adscripción	Pedro Ramón Santiago [1]; Martha Patricia Silva Payro [2]; Verónica García [2]; Diana Rubí Oropeza Tosca [3] [1] Instituto Tecnológico de la Chontalpa (ITECH), Nacajuca, Tabasco, México. [2] Universidad Juárez Autónoma de Tabasco (UJAT), Villahermosa, Tabasco, México. [3] Instituto Tecnológico de Villahermosa (ITVH), Villahermosa, Tabasco, México.
Resumen	**Objective:** The objective of the study was to analyze the obstacles experienced by graduates of the Bachelor's Degree in Languages from a university in southeastern Mexico in the process of acculturation to Canadian culture. **Theoretical Framework:** In this research,

Resumen	Berry's (1997) two-dimensional acculturation model was taken as a theoretical reference. **Method:** The methodology adopted for this research was the qualitative paradigm, with a constructivist approach, the research was phenomenological. The study population was nine graduates who participated in student mobility and four teachers who have traveled to Canada. Data collection was through interviews carried out virtually through the Microsoft Teams platform. **Results and Discussion:** The results obtained confirmed that the personal dimension is the one that most hinders the acculturation process of students who carry out mobility. Other factors that influenced acculturation were economic and social. However, the results of the study coincide with Berry's (1997) statements when he points out that the problems of migrants are resistance to preserving their identity of origin and cultural characteristics. **Implications of the research:** Within the practical implications, the students' experience can be taken up for consideration in the area of Language teaching; since adaptation problems are presented, as well as possible solutions that students can implement. **Originality/Value:** The results of the research can serve as a reference for students from Latin America who intend to carry out student mobility in Canada.
Palabras claves	Canadian Acculturation; Cultural Diversity; Intercultural Competencies; Cultural Adaptation; Acculturative Strategies.

Revista	**DYNA COLOMBIA**
ISSN	0012-7353
DOI	https://doi.org/10.15446/dyna.v91n233.112977
Título del Artículo	CEMPRI, a primary cementing software for vertical onshore wells as a tool for petroleum engineering education
Autores e instituciones de adscripción	Marcos Andrés Jiménez-Moreno [1]; José Roberto Hernández-Barajas [1]; José del Carmen Jiménez-Hernández [2]; José Ramón Laines-Canepa [1] [1] División de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Tabasco, México [2] Instituto de Física y Matemáticas. Universidad Tecnológica de la Mixteca. Huajuapan de León, Oaxaca, México. jcjim@mixteco.utm.mx
Resumen	The use of simulation software applicable to the various stages of petroleum engineering facilitates decision-making and, at the same time, minimizes possible failures, problems, and incidents during each well intervention. In addition, a computer tool provides the user with instant and accurate results that can be used during personnel training and higher education. The objective of the present work was to develop an open-source computational tool with a graphical, numerical, and schematic interface to facilitate the teaching and learning of operations related to primary cementing. The tool considers four sections: (a) wellbore diagram, (b) identification of the relation between volumetry and the geometric design of the well, (c) integration of the mechanical state with the number of intervals, slurry design, and operating characteristics of the pumps, and (d) the wellbore diagram integrated by drilling, displacement and slurry fluids, according to each of the cementing stages. Among the results, it was combined programming with specialized technical and scientific material, considering academic and field experience characteristics. The program is a versatile tool that integrates the general mechanical state and each of the five stages with a maximum depth of 5,000 m.
Palabras claves	Onshore oil well; primary cementing; software; wellbore diagram; casing

Revista	**KEW BULLETIN**
ISSN	0075-5974
DOI	https://doi.org/10.1007/s12225-024-10209-0
Título del Artículo	*Ceratozamia gigantea* (*Zamia*ceae), a new species of cycad, endemic to the mountain karst forests of Tabasco, Mexico: what the reproductive structures revealed
Autores e instituciones de adscripción	Lilí Martínez-Domínguez [1,2,3]; Fernando Nicolalde-Morejón [4]; Marlon Aramis González-Aguilar [5]; Francisco Vergara-Silva [2]; Dennis Wm. Stevenson [6] [1] Posgrado en Ciencias Biológicas, Instituto de Biología, Universidad Nacional Autónoma de México, 3er. Circuito Exterior, Ciudad Universitaria, 04510, Coyoacán, CDMX, Mexico

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Resumen	*Ceratozamia* is a diverse genus of cycads distributed from Mexico to Honduras. Here, a new species of *Ceratozamia* (*Zamiaceae, Cycadales)* from the southeast of Mexico is described and illustrated. It was previously misidentified as C. subroseophylla because of the lack of reproductive structures in the specimens from Tabasco. This work is based on phenological monitoring carried out in a karst limestone locality in Tabasco. The lifespan of pollen and ovulate strobili and their morphological changes throughout development are described. The collections of this new species were compared with specimens of all *Ceratozamia* species; however, the morphological comparison was focused on the most geographically proximate and morphologically similar species to this new taxon. To evaluate the circumscription of this species, we used geographic, morphological and DNA barcoding criteria. On this basis, we propose a new species of *Ceratozamia* for Mexico and provide notes on its reproductive phenology. The reproductive structures are the primary resource for its recognition and identification. A taxonomic key for the similar morphological species and all species that occur in Tabasco is presented along with habitat characterisation and a conservation status for *C. gigantea.* This species, whose distribution is restricted to a small geographic area, increases the diversity of *Ceratozamia* in Tabasco to three species and affirms the importance of limestone karst as areas for speciation and endemism. During the phenological monitoring, pollinator insects were captured on ovulate strobili at receptivity, observations that have been scarcely documented during this phenophase in *Ceratozamia*, highlighting the relevance of monitoring reproductive phenological patterns.
Palabras claves	Cycads; Cycadales; gymnosperms; Mesoamerica; strobili; taxonomy.

Revista	**AQUACULTURE NUTRITION**
ISSN	1353-5773
DOI	https://doi.org/10.1155/2024/1309390
Título del Artículo	Changes in Digestive Enzyme Activities during Larval Development of Spotted Seatrout (*Cynoscion nebulosus*)
Autores e instituciones de adscripción	Martín Alberto Arenas-Pardo [1], Martha Gabriela Gaxiola-Cortés [2]; Álvaro Fabricio Barreto-Altamirano [2]; Adriana del Carmen Paredes-Medina [2]; Iveth Gabriela Palomino-Albarrán [2]; Patricia Margarita Balam-Uc [2]; Juan Carlos Maldonado-Flores [2]; Carlos Alfonso Álvarez-González [1] [1] Laboratorio de Fisiología en Recursos Acuáticos, División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco (UJAT), 0.5 km Carretera Villahermosa-Cárdenas, 86000, Villahermosa, Tabasco, Mexico [2] Unidad Multidisciplinaria de Docencia e Investigación (UMDI) Sisal, Facultad de Ciencias, Universidad Nacional Autónoma de Mexico (UNAM), Puerto de Abrigo, 97356, Sisal, Yucatán, Mexico
Resumen	The spotted seatrout (*Cynoscion nebulosus*)—an important commercial species—has a high potential for aquaculture in the Gulf of Mexico. To optimize its feeding during larval rearing, this study aims to evaluate the primary gastric (pepsin), intestinal (leucine aminopeptidase and alkaline phosphatase), and pancreatic (alkaline protease, trypsin, chymotrypsin, amylase, and lipase) enzyme activities from hatching to day 30. A multivariate analysis identified three digestive enzyme development stages during the spotted seatrout larval transformation. The first stage occurred between 1 (mean ± standard error (SE) = 1.73 ± 0.14-millimeter (mm) standard length (SL)) and 3 (2.14 ± 0.07 mm SL) days after hatching (DAH); a period of digestive stability showed the highest activity in amylase and bile salt-dependent lipase. The second stage (from 4 (2.53 ± 0.09 mm SL) to 20 (10.92 ± 0.51 mm SL) DAH) was a period of digestive transition, during which leucine aminopeptidase, chymotrypsin, and alkaline proteases were identified as the predominant enzymes from 4 to 5 DAH. In the third stage—a period of digestive stability—pepsin was the major enzyme that occurred between 25 (16.51 ± 0.81 mm SL) and 30 (25.91 ± 0.82 mm SL) DAH. These results indicate

Resumen	that the spotted seatrout larvae have a digestive system adapted to lipids and carbohydrates at the onset of feeding, with an immediate transition to protein digestion when exogenous feeding begins. Additionally, the digestive system of the spotted seatrout may be considered mature at 25 DAH. Further research is needed to elucidate the mechanisms of digestive tract development in the spotted seatrout larvae.
Palabras claves	Gulf Of Mexico; Digestive Enzymes; Alkaline Protease; Proteolysis; Alimentary Canal; Digestive Organs; Chymotrypsin

Revista	**TERRA LATINOAMERICANA**
ISSN	0187-5779
DOI	https://doi.org/10.28940/terra.v42i0.1851
Título del Artículo	Changes in the Properties of Soils Contaminated with Oil Production Water Before and After Treatment with CaO
Autores e instituciones de adscripción	Beatríz A. Alegría-Hernández [1]; Iliana M. de la Garza-Rodríguez [2]; Leydi L. Vázquez-Vázquez [1]; Sonia A. Torres-Sánchez [3]; Adriana G. Jiménez-Vázquez [1]; Sugey López-Martínez [4]; Emanuel Hernández-Núñez [4]; Carlos Mario Morales-Bautista [1] [1] Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias Básicas. Carretera Cunduacán-Jalpa km 1. 86690 Cunduacán, Tabasco, México; (B.A.A.H.), (L.L.V.V.), (A.G.J.V.), (C.M.M.B). [2] Universidad Autónoma de Coahuila, Facultad de Química. Blvd. V. Carranza s/n esq. con Ing. José Cárdenas Valdés. Col. República Oriente. 25280 Saltillo, Coahuila, México; (I.M.G.R.). [3] Universidad Autónoma de San Luis Potosí, Facultad de Ingeniería. Dr. Manuel Nava No. 8, Zona Universitaria. 78290 San Luis Potosí, S.L.P, México; (S.A.T.S.). [4] Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, Unidad Mérida, Departamento de Recursos del Mar. Antigua carretera a Progreso km 6, Loma Bonita. 97310 Mérida, Yucatán, México; (S.L.M.), (E.H.N.).
Resumen	In the Mexican southeast, hydrocarbon spills and their residues affect various agricultural sites. A specific case is spills of oil production or congenital waters that cause soil salinization. When soil is contaminated, restorations are regularly carried out based on regulatory limits, but many regions still do not consider the pedological classification, so restorations are not entirely effective and, in the case of agricultural soils, reduce your productivity. For these reasons, this study evaluated the cation exchange with CaO applied to four soils contaminated with congenital waters and determined if there are differences in the treatment behavior according to the properties of each soil. It will be found that sandy soils require less treatment time, but have greater effects on their properties compared to clay soils, mainly in field capacity, pH, and porosity. Furthermore, it was found that contaminant removal times vary with respect to the type of soil and that this could be related to the amount and type of clay. In the case of congenital water spills, clay soils show a greater increase in electrical conductivity (EC) compared to sandy soils. When remediated with CaO, clay soils needed longer treatment times to reduce EC, but presented fewer changes in their physical and chemical properties. In addition, it was found that, although washing with drinking water is carried out, the treatment with CaO adds alkalinity to the soils, so they must be managed according to the crop to be developed. It is concluded that soils have different physical and chemical properties, this influences the response they have to an external agent, both when contaminated and when remediated.
Palabras claves	Cation exchange, contamination, petroleum, remediation, salinity

Revista	**WATER SWITZERLAND**
ISSN	eISSN: 2073-4441
DOI	https://doi.org/10.3390/w16182647
Título del Artículo	Characterization of Wastewater in an Activated Sludge Treatment Plant of the Food Sector
Autores e instituciones de adscripción	Oscar Yáñez-Hernández [1,2]; Armando Javier Ríos-Lira [3]; Yaquelin Verenice Pantoja-Pacheco [3]; Edgar Augusto Ruelas-Santoyo [3]; Martha Laura Asato-España [3]; Esveidi Montserrat Valdovinos-García [4]

Autores e instituciones de adscripción	[1] Doctorado en Ciencias de la Ingeniería, Tecnológico Nacional de México en Celaya, Celaya 38010, Guanajuato, Mexico [2] Universidad Virtual del Estado de Guanajuato, Purisima del Rincon 36400, Guanajuato, Mexico [3] Tecnológico Nacional de México, Instituto Tecnológico de Celaya, Celaya 38010, Guanajuato, Mexico [4] División Académica Multidisciplinaria de Jalpa de Méndez (DAMJM), Universidad Juárez Autónoma de Tabasco (UJAT), Carretera Estatal Libre Villahermosa-Comalcalco Km. 27+000 s/n Ranchería Ribera Alta, Jalpa de Méndez 86205, Tabasco, Mexico
Resumen	Recently, water has become a resource that generates controversy due to shortage alarms and high consumption by production companies. Making good use of water has become the main objective of government institutions. The food industry generates a large amount of wastewater, concentrating the largest number of contaminants originated in its processes. Wastewater from the food industry is characterized by having a large amount of organic matter, especially fats and oils, as well as suspended solids. The objective of this research is to carry out a characterization of effluents generated in a wastewater treatment plant in the food sector based on Mexican and international regulations to determine whether it is reusable. This article addresses Mexico's lag in the reuse of treated wastewater in the face of the water crisis, highlighting the urgency of adopting these practices to mitigate water scarcity. For the development of this investigation, samples were collected at the discharge point produced by the company's effluents, followed by an evaluation of their physical, chemical, and biological parameters, and finally, it was determined that the effluent follows the regulatory standards for discharge into the city sewer but outside the range for reuse in productive processes or irrigation of green areas.
Palabras claves	Wastewater; processes; environmental impact; water quality

Revista	**MATERIALS CHEMISTRY AND PHYSICS**
ISSN	1879-3312
DOI	https://doi.org/10.1016/j.matchemphys.2024.129494
Título del Artículo	Chitosan and TiO_2–C,N nanocomposite membranes: Synthesis, characterization, and evaluation of antibacterial efficacy
Autores e instituciones de adscripción	Cinthia G. Aba Guevara [1,2]; Adrián Cordero García [3]; Norma Alicia Ramos Delgado [1,2]; Mario A. Aguirre López [4]; Miguel A. Reyes González [1,2]; René Sanjuan Galindo [2] [1] National Council on Humanities, Science and Technology of Mexico, Av. Insurgentes Sur 1582, Col. Crédito Constructor, Alcaldía Benito Juárez, C.P. 03940, Mexico City, Mexico [2] National Technological Institute of Mexico - Technological Institute of Nuevo Leon, Av. De la Alianza No. 507 Inside of PIIT, Highway to International Airport Km. 10, 66629, Apodaca, Nuevo León, Mexico [3] Juarez Autonomous University of Tabasco, AV. Universidad s/n, Zona de la Cultura, Col. Magisterial, Villa Hermosa, Center, 86040, Tabasco, Mexico [4] Autonomous University of Chiapas, Faculty of Sciences in Physics and Mathematics, Calz. Emiliano Zapata Km. 8, Loma Bonita, Terán, 29050, Tuxtla Gutiérrez, Chiapas, Mexico
Resumen	Nowadays, advanced oxidation processes are one of the best techniques for the removal of organic matter from an aqueous medium, and they are also used as a disinfection process. TiO_2 has been used for many pathogenic microorganisms due to its catalytic properties applied in water disinfection processes; however, its recover and reuse is difficult since it is a powder. In this context, diverse materials and methods have been tested to support TiO_2. The objective of the present study is to synthesize an economic and environmentally friendly material, with the properties of being efficient in eliminating pathogenic microorganisms such as *Escherichia coli* (*E. coli*) and being easy to eliminate from aqueous solutions. Photocatalytic membranes of chitosan and titanium dioxide doped with carbon and nitrogen (Ch/TiO_2–C,N) were obtained. To determine the morphology, structure, composition, and optical properties of theTiO_2-C,N powder, it was characterized by FE-SEM, XRD, DRUV-Vis, and XPS, and the membranes were characterized by FE-SEM and FT-IR. The antibacterial activity of the membranes was evaluated using *Escherichia coli* as a model organism under visible light. The Colony Forming Unit (CFU) was calculated for each sample. Chitosan membranes were successfully synthesized with TIO_2-C,N and proved to be efficient in the *E. coli* elimination. It was observed that 93.77 % of the bacterial inactivation after 2 h with the Ch/TiO_2–C,N membranes, and a total inactivation after 3 h under visible light. The advantage of this material is that it's efficient and easily recoverable from the aqueous medium. It could also be used as an alternative method to chlorine or as a complementary method in water treatment.
Palabras claves	N/A

Revista	**LIFE SCIENCES**
ISSN	1879-0631
DOI	https://doi.org/10.1016/j.lfs.2023.122305
Título del Artículo	Chronic consumption of imbalance diets high in sucrose or fat induces abdominal obesity with different pattern of metabolic disturbances and lost in Langerhans cells population
Autores e instituciones de adscripción	Corazón de María Márquez Álvarez [1]; Nancy P. Gómez-Crisóstomo [1]; Erick N. de la Cruz-Hernández [1]; Mohammed El-Hafidi [2]; José Pedraza-Chaverri [3] Omar Noel Medina-Campos [3]; Eduardo Martínez-Abundis [1]; [1] Laboratorio de Investigación en Enfermedades Metabólicas e Infecciosas, División Académica Multidisciplinaria de Comalcalco, Universidad Juárez Autónoma de Tabasco, Ranchería Sur, Cuarta Sección, C.P. 86650 Comalcalco, Tabasco, Mexico [2] Departamento de Biomedicina Cardiovascular, Instituto Nacional de Cardiología Ignacio Chávez, 14080 CDMX, Mexico [3] Departamento de Biología, Facultad de Química, Universidad Nacional Autónoma de México, Ciudad de México 04510, Mexico
Resumen	**Aim:** Obesity is a worldwide health issue, associated with development of type 2 Diabetes Mellitus. The aim of this study is to analyze the effect of consumption of two hypercaloric diets on metabolic disturbance and beta cells damage. **Main methods:** Male Wistar rats were subjected to twelve months consumption of three diets: a Control balanced diet (CTD, carbohydrates 58 %, proteins 29 %, lipids 13 %) and two hypercaloric diets, high in sucrose (HSD, carbohydrates 68 %, proteins 22 %, lipids 10 %) or high in fat (HFD, carbohydrates 31 %, proteins 14 %, lipids 55 %). Serum levels of glucose, triglycerides and free fatty acids were measured after zoometric parameters determination. Antioxidant enzymes activity and oxidative stress-marker were measured in pancreas tissue among histological analysis of Langerhans islets. **Key findings:** Although diets were hypercaloric, the amount of food consumed by rats decreased, resulting in an equal caloric consumption. The HSD induced hypertriglyceridemia and hyperglycemia with higher levels in free fatty acids (FFA, lipotoxicity); whereas HFD did not increased neither the triglycerides nor FFA, nevertheless the loss of islets' cell was larger. Both diets induced obesity with hyperglycemia and significant reduction in Langerhans islets size. **Significance:** Our results demonstrate that consumption of HSD induces more significant metabolic disturbances that HFD, although both generated pancreas damage; as well hypercaloric diet consumption is not indispensable to becoming obese; the chronic consumption of unbalanced diets (rich in carbohydrates or lipids) may lead to abdominal obesity with metabolic and functional disturbances, although the total amount of calories are similar.
Palabras claves	Beta cells death; Glucose regulation; Glucotoxicity; Lipotoxicity; Obesity; Type two diabetes models.

Revista	**HELIYON**
ISSN	2405-8440
DOI	https://doi.org/10.1016/j.heliyon.2024.e38207
Título del Artículo	Coexistence of populations in a Leslie-Gower tritrophic model with Holling-type functional responses
Autores e instituciones de adscripción	Gamaliel Blé [1]; Luis Miguel Valenzuela [2]; Manuel Falconi [3]; [1] División Académica de Ciencias Básicas, UJAT, Cunduacán-Jalpa de Méndez, Cunduacán, 86690, Tabasco, Mexico [2] División Académica Multidisciplinaria de Jalpa de Méndez, UJAT, Carretera Nacajuca–Jalpa de Méndez, R/a Rivera Alta, 86205, Jalpa de Méndez, Tabasco, Mexico [3] Departamento de Matématicas, Facultad de Ciencias, UNAM, C. Universitaria, 04510, CDMX, Mexico
Resumen	The dynamics of a Leslie-Gower type tritrophic model are analyzed. The model considers the interaction among three populations, a resource, a predator and a superpredator. It is assumed that the predator is generalist and its interaction with the resource is according to a general Holling-type functional response. Furthermore, it is assumed that the superpredator is specialist and its interaction with the predator follows a Holling type II functional response. The goal of this work is to show conditions that guarantee the coexistence of the three species. To do this, the existence of a stable equilibrium point or a stable limit cycle is demonstrated, which appears via a bifurcation. In addition, the analytical results are exemplified through numerical simulations.

Palabras claves	Leslie-Gower system; Tritrophic model; Holling functional response; Hopf bifurcation; Bautin bifurcation

Revista	**PASOS REVISTA DE TURISMO Y PATRIMONIO CULTURAL**
ISSN	eISSN; 1695-7121
DOI	https://doi.org/10.25145/j.pasos.2024.22.010
Título del Artículo	Competitiveness Management Factors Analysis of Tapijulapa Magical Town from The Stakeholder's Perspective
Autores e instituciones de adscripción	Fabiola Itzel Ortiz Martínez [1]; Andrés Guzmán Sala [1]; Roberto Reyes Cornelio [1] [1] Universidad Juárez Autónoma de Tabasco
Resumen	The objective of this work is to determine the relevant management factors for the Magical Town of Tapijulapa, Mexico, from the perspective of its stakeholders. Various researchers have proposed factors for the management of tourist destinations in theoretical models of competitiveness, given the influence they exert on the performance of their activity. Indeed, in this tourist destination, its Steering Committee does not know what these factors are and the role they play in designing strategies that contribute to its permanence in the market. The study is carried out under a quantitative methodological approach, with a non probabilistic sample of 200 tourism providers. A hypothesis test was made based on analysis of structural equations. The results show that marketing management has the greatest impact on management factors, followed by environmental management, that would lay the groundwork for establishing lines of action that contribute to their competitiveness and long term sustainability
Palabras claves	Competitiveness; Management; Tourist destinations; Magical towns of Mexico; Sustainability.

Revista	**BIOMASS SWITZERLAND**
ISSN	eISSN: 2673-8783
DOI	https://doi.org/10.3390/biomass4020026
Título del Artículo	Conversion of Sweet Whey to Bioethanol: A Bioremediation Alternative for Dairy Industry
Autores e instituciones de adscripción	Laura Conde-Báez [1]; Cuauhtémoc F. Pineda-Muñoz [1]; Carolina Conde-Mejía [2]; Elizabeth Mas-Hernández [3]; Antioco López-Molina [2] [1] Facultad de Ciencias Químico Biológicas, Universidad Autónoma de Guerrero, Av. Lázaro Cárdenas, s/n, Ciudad Universitaria, Chilpancingo 39086, Guerrero, Mexico [2] División Académica Multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, Carretera Estatal Libre Villahermosa-Comalcalco Km 27 s/n, Ranchería Ribera Alta, Jalpa de Méndez 86205, Tabasco, Mexico [3] Facultad de Química, Universidad Autónoma de Querétaro, Cerro de las Campanas s/n, Col. de las Campanas, Santiago de Querétaro 76010, Querétaro, Mexico
Resumen	In many countries, whey from the dairy industry is an abundant waste that generates an important environmental impact. Alternative processes to use the whey and minimize the environmental impact are needed. This work considered six formulations with different ammonium sulfate and L-phenylalanine (L-Phe) concentrations to produce bioethanol in sweet whey fermentation by *Kluyveromyces marxianus*. The results showed a maximum bioethanol concentration equal to 25.13 ± 0.37 g L^{-1} ($p < 0.05$) for formulation F6, with 1 g L^{-1} of L-Phe and 1.350 g L^{-1} of ammonium sulfate (96 h). For these conditions, the chemical oxygen demand removal percentage (CODR%) was 67%. The maximum CODR% obtained was 97.5% for formulation F3 (1 g L^{-1} of L-Phe) at 96 h; however, a significant decrease in bioethanol concentration (14.33 ± 2.58 g L^{-1}) was observed. On the other hand, for formulation, F3, at 48 h of fermentation time, a bioethanol concentration of 23.71 ± 1.26 g L^{-1} was observed, with 76.5% CODR%. Based on these results, we suggest that the best conditions to obtain a significant bioethanol concentration and CODR% value are those used on the configuration F3 at 48 h.
Palabras claves	Biofuels; COD removal percent; dairy waste; *Kluyveromyces marxianus*

Revista	**COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION**
ISSN	1878-7274
DOI	https://doi.org/10.1016/j.cnsns.2024.108250
Título del Artículo	Convex symmetric rectangular pentagon central configurations
Autores e instituciones de adscripción	M. Álvarez-Ramírez [1]; J. Lino Cornelio [2]; Josep M. Cors [3] [1] Departamento de Matemáticas, UAM–Iztapalapa, 09340 Iztapalapa, Mexico City, Mexico [2] DACB, Universidad Juárez Autónoma de Tabasco, 86690 Cunduacán, Tabasco, Mexico [3] Departament de Matemàtiques, Universitat Politècnica de Catalunya, 08242 Manresa, Catalonia, Spain
Resumen	A convex rectangular pentagon, also called *house-shaped*, is a pentagon with the added restriction that two non-adjacent sides have equal lengths, each of which forms a right angle with the intervening side. In this paper, we focus on the existence of central configurations of the 5-body problem, where the five bodies are in a symmetric house-shaped configuration. That is, when the five bodies are located at the vertices of a convex rectangular pentagon, and moreover, the body not belonging to the two parallel sides lies along the symmetry line.
Palabras claves	Central configurations; 5-body problem

Revista	**DIGEST JOURNAL OF NANOMATERIALS AND BIOSTRUCTURES**
ISSN	1842-3582
DOI	https://doi.org/10.15251/DJNB.2024.192.493
Título del Artículo	Coupling of TiO_2 and ZnO with metal sulfides CuS AND ZnS for applications in solar cells
Autores e instituciones de adscripción	J. C. Solís Cortázar [1]; A. K. López Matus [1]; L. Rojas Blanco [1]; G. Pérez Hernández [1]; I. Zamudio Torres [1]; B. L. Pérez Escobar [1]; R. Castillo Palomera [1]; E. Ramírez Morales [1] [1] Academic Division of Engineering and Architecture, Juarez Autonomous. University of Tabasco, Road Cunduacán-Jalpa KM. 1. Col. La Esmeralda CP. 86690. Cunduacán, Tabasco, México
Resumen	TiO_2 and ZnO films were synthesized by the dip-coating method. The coupling of thin films of metal sulfides: CuS and ZnS by thermal evaporation in each semiconductor oxide was analyzed. TiO_2, CuS/TiO_2, ZnS/TiO_2, ZnO, CuS/ZnO, and ZnS/ZnO samples were analyzed by X-ray diffraction, Raman microscopy, atomic force microscopy, UV-Vis spectroscopy, and photoresponse. The optical and morphological analysis revealed that the CuS/TiO_2 and CuS/ZnO samples present better properties than the pristine samples. This was attributed to the fact that their absorption edges move to lower energy regions and their roughness increases refraction, so there is a greater photoelectric response due to the accumulation of photo-injected electrons in the conduction band.
Palabras claves	TiO_2, ZnO, Heterojunctions, Sol-gel, Thin films, Metal sulfides

Revista	**RISTI - REVISTA IBÉRICA DE SISTEMAS E TECNOLOGÍAS DE INFORMACAO**
ISSN	1646-9895
URL	https://www.risti.xyz/issues/ristie70.pdf
Páginas	356-365
Título del Artículo	Creation of interactive multimedia educational material in a microcontent scenario
Autores e instituciones de adscripción	Almeida Aguilar M. Alejandrina [1] ; Jerónimo Yedra Rubén [1] ; Gómez Ramos José Luis [1] ; Pineda Castillo Kristian A [2] ; Corona Ferreira Arturo [1] [1] División Académica de Ciencias y Tecnologías de la Información, Universidad Juárez Autónoma de Tabasco, Av. Universidad s/n, Col. Magisterial, Villahermosa, Tabasco, CP. 86040, México [2] Colegio de Bachilleres del Estado de Sinaloa, México.
Resumen	Microcontent is short, concise and relevant content on a specific topic and is quite suitable for today's fast-paced life, so it is brief and preferably fits into our daily lives, so it must be interesting, eye-catching and quick to understand. assimilate. A mixed research (quantitative-

Resumen	qualitative) was carried out to detect digital consumption preferences and the time that students dedicate to it, taking into account that they are students who are close to graduating and where, in addition to their academic load, they are lending their social service and/or professional practices. The methodology for creating the video tutorials was that of Velarde et al. and for the preparation of the digital book: Model for the design of interactive editorial material As a result, the creation of a multimedia product with which the user interacted dynamically was achieved.
Palabras claves	Microcontent; educational material; interactive multimedia.

Revista	**RISTI - REVISTA IBÉRICA DE SISTEMAS E TECNOLOGIAS DE INFORMACAO**
ISSN	1646-9895
URL	https://www.risti.xyz/issues/ristie71.pdf
Título del Artículo	Data mining model for the detection of diseases in primary care patients
Autores e instituciones de adscripción	Ismael Zarate Hernández [1]; Eric Ramos Méndez [1]; Guillermo de los Santos Torres [1]; Gerardo Arceo Moheno [1] [1] Universidad Juárez Autónoma de Tabasco
Resumen	Data mining is a tool that can currently be applied in different areas such as business, scientific research, and government security. One of these where it can be applied is health. In this sector, one of the most frequent problems occurs in diagnoses where erroneous diagnoses are common, resulting in patients not being given adequate treatment. Therefore, the objective of this research is the creation of a data mining model for the detection of diseases in first level medical care patients. For which a data mining model was developed using the K-means clustering algorithm. K-Means is an unsupervised clustering algorithm that is widely used to discover patterns in large unlabeled data sets. With the analysis of the variables that make up the dataset created for this project, it was determined that the data found can help understand the patterns of medication use, compliance and possible side effects through the analysis of the variables Primary condition and Secondary condition.
Palabras claves	Data mining; clinical diagnoses; cluster; K-Means algorithm

Revista	**BIOMOLECULES**
ISSN	eISSN: 2218-273X
DOI	https://doi.org/10.3390/biom14070775
Título del Artículo	De Novo Design of Inhibitors of DNA Methyltransferase 1: A Critical Comparison of Ligand- and Structure-Based Approaches
Autores e instituciones de adscripción	Diana L. Prado-Romero [1]; Fernanda I. Saldívar-González [1]; Iván López-Mata [2,3]; Pedro A. Laurel-García [1]; Adrián Durán-Vargas [4]; Enrique García-Hernández [4]; Norberto Sánchez-Cruz [3,5]; José L. Medina-Franco [1] [1] DIFACQUIM Research Group, Department of Pharmacy, School of Chemistry, Universidad Nacional Autónoma de México, Avenida Universidad 3000, Mexico City 04510, Mexico [2] División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Carretera Cunduacán-Jalpa de Méndez, Km 1, Cunduacán 86690, Tabasco, Mexico [3] Instituto de Química, Unidad Mérida, Universidad Nacional Autónoma de México, Carretera Mérida-Tetiz Km. 4.5, Ucú 97357, Yucatán, Mexico [4] Instituto de Química, Universidad Nacional Autónoma de México, Ciudad Universitaria, Mexico City 04510, Mexico [5] Instituto de Investigaciones en Matemáticas Aplicadas y en Sistemas, Unidad Mérida, Universidad Nacional Autónoma de México, Sierra Papacál 97302, Yucatán, Mexico
Resumen	Designing and developing inhibitors against the epigenetic target DNA methyltransferase (DNMT) is an attractive strategy in epigenetic drug discovery. DNMT1 is one of the epigenetic enzymes with significant clinical relevance. Structure-based de novo design is a drug discovery strategy that was used in combination with similarity searching to identify a novel DNMT inhibitor with a novel chemical scaffold and warrants further exploration.

Resumen	This study aimed to continue exploring the potential of de novo design to build epigenetic-focused libraries targeted toward DNMT1. Herein, we report the results of an in-depth and critical comparison of ligand- and structure-based de novo design of screening libraries focused on DNMT1. The newly designed chemical libraries focused on DNMT1 are freely available on GitHub.
Palabras claves	Chemoinformatics; drug discovery; docking; epigenetics; epigenetic target profiler; focused libraries; fragments; library design; open-access

Revista	**MATERIALS SCIENCE IN SEMICONDUCTOR PROCESSING**
ISSN	1369-8001
DOI	https://doi.org/10.1016/j.mssp.2023.108042
Título del Artículo	Defects in local atomic structure of ZnO films sensitized with tinto and mangrove organic dyes
Autores e instituciones de adscripción	Marcela Arellano-Cortaza [1,2]; Germán Pérez-Hernández [1]; Erik Ramírez-Morales [1]; Richart Falconi [1]; Lizeth Rojas-Blanco [1]; José Miguel Mora-Fonz [1]; Jorge Alberto Acosta-Alejandro [3]; Mario Alberto Guzmán-Cruz [1]; José Mustre de León [4]; Manuel Acosta-Alejandro [1] [1] Universidad Juárez Autónoma de Tabasco, Avenida Universidad S/n Zona de la Cultura, Colonia Magisterial, CP 86690, Villahermosa Centro, Tabasco, Mexico [2] Departamento de Investigación en Física, Universidad de Sonora, Blvd. Luis Encinas y Rosales S/N, Hermosillo, Sonora, 83000, Mexico [3] Universidad Politécnica del Centro, Carretera Federal, Villahermosa-Teapa Km 22.5, Tumbulushal, Centro, Tabasco, 86290, Mexico [4] Departamento de Física Aplicada, CINVESTAV Unidad Mérida, Mérida, Yucatán, 97310, Mexico
Resumen	In this work, the dye/ZnO complex was prepared, using natural dyes extracted from the red tree (Haematoxylum campechianum L.) and mangrove tree (Rhizophora Mangle), with a concentration of 5×10^{-3} M, impregnation time of 2 and 6 h, using a mixture of ethanol-water and ethanol as solvents. The ZnO particles were obtained by sol gel method and deposited on Corning glass by the doctor blade technique. X-ray diffraction indicates that these particles belong to the wurtzite-type hexagonal crystalline structure. Anthraquinone and anthocyanin molecules were identified in the natural dyes used. The results of the Fourier Transform Infrared Spectroscopy of the complexes show the band associated with the functional group of the carboxyls, which represents evidence of the presence of the dyes in the semiconductor. X-ray absorption spectroscopy shows changes in the local environment around the Zn atoms. Both dyes introduce a greater quantity of electrons in the unoccupied p states of Zn. The simulation developed and the analysis of the EXAFS signals show the formation of new bonds between Zn and O with dye atoms thus reducing the Zn O and Zn–Zn bond lengths. Also, the distribution of the bonds of the neighbors closest to the Zn, in the ZnO matrix, is modified due to the generation of vacancies of O and Zn. These results imply that the obtained dyes can effectively be used as photosensitizers in ZnO-based solar cells.
Palabras claves	N/A

Revista	**SUSTAINABLE CHEMISTRY AND PHARMACY**
ISSN	2352-5541
DOI	https://doi.org/10.1016/j.scp.2023.101403
Título del Artículo	Degradation features of bioplastics-based disposable straws in soil and aerobic mineralization: Insight into final properties and chemical pathways.
Autores e instituciones de adscripción	A. de la Luz-Ramos [1]; D. Palma-Ramírez [1,2]; G. Pineda-Flores [1]; H. Dorantes-Rosales [3]; D.S. García-Zaleta [4] [1]Instituto Politécnico Nacional IPN, Centro Mexicano para la Producción más Limpia (CMP+L), Ciudad de México, Mexico [2]Instituto Politécnico Nacional-IPN, Unidad Profesional Interdisciplinaria de Ingeniería (UPIIH), San Agustín Tlaxiaca, Mexico [3]Instituto Politécnico Nacional, Escuela Superior de Ingeniería Química e Industrias Extractivas (ESIQIE), Ciudad de México, Mexico [4]División Académica Multidisciplinaria de Jalpa de Méndez, Carretera Cunduacán–Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, km 1, Col. La Esmeralda, Villahermosa 86690, Tabasco, Mexico

Resumen	The transition to a sustainable economy has led industries to seek new raw materials for the production of renewable-based plastics. The present work shows the confirmation of formulation and initial degradation features in non-controlled soil of five types of straws including bio- and fossil-based polymers demonstrating that those based on starch could contain bio-based polymers; bio-based-polyethylene (PE) and -poly(propylene) (PP). Biodegradation percentage, structural, thermal, morphological and visual analysis are discussed indicating that after twelve weeks there is low weight loss percentage which is higher for cellulose, followed by starch/low density poly(ethylene) (LDPE) (S/LDPE), corn starch/poly(propylene) (S/PP), poly(lactic acid) (PLA) and PP. Selected avocado and corn-based straws (S/LDPE and S/PP) were subjected to controlled CO_2 evolution test through ASTM D5338-15 essay to stablish the biodegradation percentage. Derived from CO_2 evolution test of selected S/LDPE and –S/PP, it is established that the carbon present in the sample follows two possible routes; 1) Biomass growth, corroborated by the increase in colony-forming units in fungi and aerobic mesophilic bacteria, and 2) metabolization expressed in CO_2 production. The S/LDPE straw presented higher biodegradability in both tests than S/PP. Insights of chemical pathways and final monitoring properties are discussed. These findings provide information to be used to support policies around the world to consider more sustainable materials that are not just bio-based materials but ensure their biodegradation into bioplastic products.
Palabras claves	Bio-based; Straws; Biodegradability; CO2 evolution; Soil

Revista	**NUTRIENTS**
ISSN	eISSN:2072-6643
DOI	https://doi.org/10.3390/nu16040490
Título del Artículo	Differential Alterations of Expression of the Serotoninergic System Genes and Mood-Related Behavior by Consumption of Aspartame or Potassium Acesulfame in Rats
Autores e instituciones de adscripción	José Jaime Martínez-Magaña [1]; Alma Delia Genis-Mendoza [1]; Ileana Gallegos-Silva [1]; María Lilia López-Narváez [2]; Isela Esther Juárez-Rojop [2]; Juan C. Diaz-Zagoya [3]; Carlos Alfonso Tovilla-Zárate [2]; Thelma Beatriz González-Castro [4]; Humberto Nicolini [1]; Anayelly Solís-Medina [1] [1] Laboratorio de Genómica de Enfermedades Psiquiátricas y Neurodegenerativas, Instituto Nacional de Medicina Genómica, Ciudad de México 14610, Mexico [2] División Académica de Ciencias de la Salud, Universidad Juárez Autónoma de Tabasco, Villahermosa 86100, Mexico [3] División de Investigación, Departamento de Bioquímica, Facultad de Medicina, Universidad Nacional Autónoma de México, Ciudad de México 04510, Mexico [4] División Académica Multidisciplinaria de Comalcalco, Universidad Juárez Autónoma de Tabasco, Comalcalco 86650, Mexico
Resumen	The use of aspartame (ASP) and potassium acesulfame (ACK) to reduce weight gain is growing; however, contradictory effects in body mass index control and neurobiological alterations resulting from artificial sweeteners consumption have been reported. This study aimed to evaluate the impact of the chronic consumption of ASP and ACK on mood-related behavior and the brain expression of serotonin genes in male Wistar rats. Mood-related behaviors were evaluated using the swim-forced test and defensive burying at two time points: 45 days (juvenile) and 95 days (adult) postweaning. Additionally, the mRNA expression of three serotoninergic genes (*Slc6a4, Htr1a, and Htr2c*) was measured in the brain areas (prefrontal cortex, hippocampus, and hypothalamus) involved in controlling mood-related behaviors. In terms of mood-related behaviors, rats consuming ACK exhibited anxiety-like behavior only during the juvenile stage. In contrast, rats consuming ASP showed a reduction in depressive-like behavior during the juvenile stage but an increase in the adult stage. The expression of *Slc6a4* mRNA increased in the hippocampus of rats consuming artificial sweeteners during the juvenile stage. In the adult stage, there was an upregulation in the relative expression of *Slc6a4* and *Htr1a* in the hypothalamus, while *Htr2c* expression decreased in the hippocampus of rats consuming ASP. Chronic consumption of ASP and ACK appears to have differential effects during neurodevelopmental stages in mood-related behavior, potentially mediated by alterations in serotoninergic gene expression.
Palabras claves	Aspartame; potassium acesulfame; serotonin receptors; low-nutritional sweeteners; *Htr1a*; *Slc6a4*; *Htr2c*

Revista	**REVISTA DE BIOLOGÍA TROPICAL**
ISSN	0034-7744
DOI	https://doi.org/10.15517/rev.biol.trop..v72i1.56736
Título del Artículo	Digestive proteases of Morelet's crocodile (*Crocodylus moreletii*) in three life stages
Autores e instituciones de adscripción	Manuel Alejandro Castillo Rodríguez [1]; Judith Andrea Rangel Mendoza [2]; Emyr Saul Peña Marín [3] Carlos Alfonso Álvarez González [1]; Marco Antonio López Luna [2]; Claudia Ivette Maytorena Verdugo [4]; [1] Laboratorio de Fisiología en Recursos Acuáticos (LAFIRA)-DACBIOL, Universidad Juárez Autónoma de Tabasco, Carretera Villahermosa Cárdenas Km 0.5, 86139 Villahermosa, Tabasco, México; alejandro1708ava@gmail.com, alvarez_alfonso@hotmail.com [2] Centro de Investigación para la Conservación de Especies Amenazadas (CICEA)-DACBIOL, Universidad Juárez Autónoma de Tabasco, Carretera Villahermosa Cárdenas Km 0.5, 86139 Villahermosa, Tabasco, México; judith.rangel@ujat.mx, marco.lopez@ujat.mx [3] Instituto de Investigaciones Oceanológicas, Universidad Autónoma de Baja California (UABC), km 107 carretera Tij/Eda, 22860 Ensenada, Baja California, México, emyr.pea@uabc.edu.mx [4] Universidad Politécnica del Centro, Carretera Federal, Villahermosa-Teapa Km 22.5, Tumbulushal Centro, 86290 Villahermosa, Tabasco; clau.maytorena@gmail.com (*Correspondence)
Resumen	**Introduction:** Morelet's crocodile (*Crocodylus moreletii*) is a species distributed in the Mexican southeast and threatened due to multiple pressures. **Objective:** To characterize the digestive proteases in the acid phase (stomach) and alkaline phase (intestine) of three life stages of *C. moreletii in captivity* (hatchling, juvenile, and adult) **Methods:** Total alkaline and acid protease activities were quantified using casein and haemoglobin as substrates. Trypsin, chymotrypsin, leucine aminopeptidase, and elastase activities were quantified using synthetic substrates. Protease profiles were analysed by SDS-PAGE and Native-PAGE **Results:** The specific activity of acid and alkaline proteases showed differences between the three stages, finding the highest activity in the juveniles. Trypsin, chymotrypsin, leucine aminopeptidase, and elastase activities were higher in hatchlings. There were differences in optimum pH and temperature of acid and alkaline proteases, trypsin, and leucine aminopeptidase between the three stages, demonstrating the diversification of the enzymes according to different stages, as well as the presence of specific isoforms in each stage of *C. moreletii*. The acid phase zymogram showed four bands with pepsin-like acid activity in the hatchling and juvenile crocodile, while in the adult only two of the four bands were detected. The alkaline zymogram showed that the hatchling had the highest number of activity bands compared to the other stages, corresponding to the high specific activity reported in the alkaline phase **Conclusions:** Digestive proteases of Morelet's crocodile differ in their biochemical characteristics and the number of proteases between hatchling, juvenile, and adult. This could help in the future design of balanced diets as well to the sustainable management and production of this species.
Palabras claves	Pepsin; trypsin; leucine aminopeptidase; hatchling; juvenile; adult.

Revista	**NANO-STRUCTURES AND NANO-OBJECTS**
ISSN	2352-5088
DOI	https://doi.org/10.1016/j.nanoso.2024.101215
Título del Artículo	Direct obtaining of pure anatase TiO_2 nanostructures, characterization, size-tuning, and applications
Autores e instituciones de adscripción	E.D. Gutiérrez-López [1,2]; D. Domínguez [2]; C. Ortiz-Domínguez [3]; U. Caudillo-Flores [2]; M.A. Guzmán-Cruz [3]; S. Fuentes-Moyado [2]; L. Morales de la Garza [2]; J.N. Díaz de León [2] [1] Centro de Investigación Científica y de Educación Superior de Ensenada, Mexico [2] Universidad Nacional Autónoma de México, Centro de Nanociencias y Nanotecnología, Ensenada, BC, Mexico [3] Universidad Juárez Autónoma de Tabasco, Tabasco, Mexico
Resumen	Research on nanoparticles and their applications in pollutant elimination and transformation has proven to be a practical approach to dealing with these environmental problems. However, effectively tuning the nanoparticle size and shape is still challenging. This article mainly focused on the synthetic approach for pure anatase TiO_2 systems, their characterization, size tuning optimization, and their application in dye photodegradation and as support of WS_2 nanoslabs. The synthesis parametric analysis allowed us to obtain nanoparticles from 6.5 μm to 15 nm via the hydrothermal method assisted by urea. The mechanism of nanoparticles formation is discussed in light of the surfactant (TX-100) and urea

Resumen	effects observed. Urea in high concentrations allows the formation of hexagonal and cuboctahedron-shaped nanocrystals of around □20 nm that function as a seed for large spherical microparticles. XRD results confirmed the presence of high intensity (101) family planes of anatase. Also, the XPS results revealed that the Ti 2p signal does not shift due to the particle size effects. However, raising urea quantities in the synthesis procedure increases the adsorbed carbon species at the surface of nanoparticles. This effect was also observed in the photocatalytic degradation of red amaranth dye. The smallest titania nanoparticles were used as support for WS_2 nano slabs, demonstrating that it would be possible to generate sulfide fullerene-like structures at the surface. These curved nanoparticles allowed dislocations on the WS_2 nano slabs to form new active sites at typically hydrodesulfurization inactive basal planes.
Palabras claves	Nanospheres; $TiO_{2;}$ Photocatalysis; Dye degradation; Parametric análisis; $WS_{2;}$ Fullerene-like

Revista	**COLEOPTERISTS BULLETIN**
ISSN	1948-7134
DOI	https://doi.org/10.1649/0010-065X-78.1.9
Título del Artículo	Diversity and Seasonality of *Cleridae (Coleoptera)* in the Tropical Rainforest of the Sierra El Madrigal in Tabasco, Mexico
Autores e instituciones de adscripción	Manuel Alberto Hernández-May [1;]Víctor Hugo Toledo-Hernández [2;] Angélica María Corona-López [2;] Manuel Pérez-De la Cruz [1;] Jacques Rifkind [3;] John M. Leavengood Jr. [4;] Miguel Alberto Magaña-Alejandro [5;] León David Olivera-Gómez [5;] Aracely De la Cruz-Pérez [5] [1] División Académica de Ciencias Biológicas (DACBiol) Universidad Juárez Autónoma de Tabasco (UJAT) 86150, Villahermosa, Tabasco, MEXICO [2] Centro de Investigación en Biodiversidad y Conservación (CIβγC) Universidad Autónoma del Estado de Morelos (UAEM) 62209, Cuernavaca, Morelos, MEXICO, [3] California State Collection of Arthropods Sacramento, CA 95832, USA [4] United States Department of Agriculture, APHIS, PPQ 9325 Bay Plaza Blvd, Suite 206, Tampa, FL 33619, USA [5] División Académica de Ciencias Biológicas (DACBiol) Universidad Juárez Autónoma de Tabasco (UJAT) 86150, Villahermosa, Tabasco, MEXICO
Resumen	The diversity of the family Cleridae in the tropical rainforest of the Sierra El Madrigal, Tabasco, Mexico is presented. The systematic collection carried out during an annual cycle revealed 33 species, 14 genera, and four subfamilies. The dominant genus was *Phyllobaenus* Dejean with six species followed by *Plocamocera* Spinola with five species. Fifteen species are new records for Tabasco. *Phyllobaenus subvittatus* (Gorham) represents a **new country record** for Mexico. The family showed a marked seasonality with greater richness, abundance, and diversity found during the rainy season. Malaise traps were the most efficient collection method, producing 69.7% of the recorded species richness. The nonparametric estimators of Chao 1 (46 species) and Jackknife 1 (51 species) indicate a higher number of species than the observed species value (33 species), which suggests that there are species still to be recorded and more collecting effort to be made. The highest richness and abundance of Cleridae were recorded during the months of June, July, and August, coinciding with the highest recorded rainfall. The Pearson correlation coefficient showed that richness and precipitation have a statistically significant positive relationship ($p < 0.05$). The data show that the diversity of Cleridae of the Sierra El Madrigal is high and little known (new records), demonstrating the need to continue documenting i
Palabras claves	*Cleroidea*, insect, checkered beetles, predators, jungle, biodiversity

Revista	**REVISTA DE BIOLOGÍA TROPICAL**
ISSN	0034-7744
DOI	https://doi.org/10.15517/rev.biol.trop..v72i1.55604
Título del Artículo	Diversity of longicorn beetles (*Coleoptera: Cerambycidae*) associated with a mangrove swamp in Tabasco, Mexico

Autores e instituciones de adscripción	José del Carmen Gerónimo Torres [1]; Óscar Iván Álvarez Ramón [2]; Liliana Ríos Rodas [3]; Baltazar Sánchez Díaz [4]; Facundo Sánchez Gutiérrez [3]; Manuel Pérez de la Cruz [2] [1] Instituto Tecnológico de Huimanguillo, Tecnológico Nacional de México, Carretera del Golfo Malpaso-El Bellote Km 98.5, Col. Ranchería Libertad 86400 Huimanguillo, Tabasco, México. [2] División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Carretera Villahermosa-Cárdenas, km 0.5 S/N, entronque a Bosques de Saloya, Villahermosa, Tabasco, México [3] Facultad Maya de Estudios Agropecuarios, Universidad Autónoma de Chiapas, Carretera Catazajá-Palenque, km 4 Catazajá, Chiapas, México [4] Instituto Tecnológico Superior de Comalcalco, Tecnológico Nacional de México, Carretera Vecinal Comalcalco-Paraíso, km. 2 Rancho Occidente, 3ra. Sección CP 86651, Comalcalco, Tabasco, México.
Resumen	**Introduction:** The mangrove is one of the most important ecosystems on the planet, due to the ecological role it plays on coastlines, it provides development, protection, and feeding areas for various species. **Objective:** To determine the diversity and annual fluctuation of the cerambycid community, as well as the vertical distribution of species richness associated with the edge and interior of a mangrove in Tabasco, Mexico. **Methods:** The sampling was carried out from August 2016 to July 2017. The capture of insects was performed with interception traps baited with ethanol 70 % at 1.5, 6, and 12 m height, on the edge and interior of the mangrove. **Results:** A total of 382 specimens were collected, belonging to three subfamilies, 25 genera, and 36 species; Laminae was the subfamily most diverse with 24 species, followed by Cerambycinae with 11 species. At the edge of the mangrove 31 species were captured, and 21 in the interior. The ^{1}D index determined that the edge was 2.51 more diverse than the interior, with a similarity of 61 %, sharing 16 species. The fluctuation of the communities on the edge and interior presented remarkable differences during the sampling year. On the edge, the greatest species richness was recorded at 6 m height and in the interior at 1.5 m and 6 m. **Conclusions:** Studies related to the vertical distribution of this group of insects, together with the increase in collection time and using complementary techniques, could give better results to inventory a larger number of species in the ecosystems.
Palabras claves	Forest; cerambycids; vertical distribution; insects; richness.

Revista	**FRONTIERS IN SUSTAINABLE FOOD SYSTEMS**
ISSN	2571-581X
DOI	https://doi.org/10.3389/fsufs.2024.1329532
Título del Artículo	Edible plants as a complement to the diet of peasant farmers: a case study of the Totonacapan region of Puebla, Mexico
Autores e instituciones de adscripción	José Espinoza Pérez [1]; Sergio Cortina Villar [1]; Hugo Perales [1]; Orquidia G. Méndez Flores [2]; Lorena Soto Pinto [1] [1] El Colegio de la Frontera Sur (ECOSUR), Carretera Panamericana y Periférico Sur S.N., San Cristóbal de las Casas, Mexico, [2] Universidad Juárez Autónoma de Tabasco (UJAT), Col. Tamulte de las Barrancas, Villahermosa, Tabasco, Mexico
Resumen	Peasant societies have traditionally produced food for themselves and for the market based on a diversity of plants that they grow and cultivate in their agroecosystems; however, these societies are modifying their agriculture, their consumption, the structure and composition of their plots and abandoning the consumption of these species, which are gradually ceasing to be part of their diets. This research aimed to analyze the contribution of local crop diversity to the peasant diet of the Totonacapan region of Puebla, Mexico. During 2020, 270 dietary surveys were applied, and in 2022, the richness of edible species in 146 peasant plots was recorded and 69 semi-structured interviews were conducted to document ethnobotanical information on edible species. A total of 102 edible species were identified in the plots; 65 are native and 37 are introduced. The milpas and the family garden are the main areas where food for self-consumption is grown: corn, beans, and some grean leaves (*quelites*). Meanwhile, coffee plantations and horticultural areas mainly contain food for sale; coffee, fat pepper, bananas, oranges, and chili peppers stand out. Half of the plants inventoried (53%) were not recorded in the diet surveys. Absent foods were fruit trees, roots and tubers, spices, *quelites*, and local vegetables. On the other hand, most of the 48 species recorded in the plots and the dietary surveys had a very low frequency of consumption. The limited consumption of this group of species is largely because they are no longer suitable for consumption, are difficult to cook, or require much time for collection and preparation. The reason villagers conserve these plants may be because they are emergency foods. After

Resumen	all, they consume them eventually or in times of scarcity, hence the importance of keeping them in the plots. Even though a great wealth of edible plants is grown in the campesino plots, it does not mean they have a relevant presence in the diets.
Palabras claves	Agrodiversity, farmer plots, self-consumption, Totonacs, traditional food

Revista	**REVISTA MEXICANA DE INGENIERA QUÍMICA**
ISSN	1665-2738
DOI	https://doi.org/10.24275/rmiq/Poly24218
Título del Artículo	Effect of chitosan on the electrokinetic, spectroscopic, and textural properties of TiO_2 nanoparticles
Autores e instituciones de adscripción	K. Macías-Collado [1]; L.T. Ballesteros-Rozo [2]; V. W. Velázquez-Vázquez [1]; D.M. Frías-Márquez [3]; R. López-González [3]; M.A. Álvarez-Lemus [1] [1] Laboratory of Bioassays and Environmental Testing, Academic Division of Engineering and Architecture, Juarez Autonomous University of Tabasco, Tabasco, México [2] University of America, Bogota, Colombia. [3] Nanotechnology Laboratory, Academic Division of Engineering and Architecture, Juarez Autonomous University of Tabasco, Tabasco, México.
Resumen	Titania (TiO_2) nanoparticles were synthesized using the sol-gel method and subsequently modified with chitosan (CS). FTIR spectroscopy confirmed the presence of chitosan by modifications on the 3380 cm^{-1} and 1630 cm^{-1} bands, while XRD showed a shift in the reflection peaks from titania when it was bound to chitosan. TGA revealed that the actual amount of chitosan added to the composite was about 16% wt. Hydrodynamic diameter for titania particles was 720 nm, whereas the composite exhibited mainly particles of 1098 nm. Zeta potential measurements showed a change from -13.7 to 21 mV for TiO_2 -CS compared to pure titania. Physisorption analysis determined the BET specific surface area of TiO_2 and TiO_2 -CS being 38 m2 /g and 24 m2 /g, respectively. In the visual observation, the behavior of titania and TiO2 -CS suspended in deionized water for 24 hours was observed. Contact angle measurements were taken over calcite artificial rocks using brine, brine/$TiO_{2,}$ and brine/TiO_2 -CS, resulting in angles of 113.73°, 106.8°, and 97.90°, respectively. Although they fall within the hydrophobic range, a decrease in contact angle was achieved by adding nanoparticles. Sedimentation and agglomeration of titanium particles were formed at shorter time than for the composite suspended particles
Palabras claves	Chitosan, $TiO_{2,}$ nanoparticles, particle stability, contact angle.

Revista	**SCIENTIFIC REPORTS**
ISSN	2045-2322
DOI	https://doi.org/10.1038/s41598-024-69092-1
Título del Artículo	Effect of clays incorporation on properties of thermoplastic starch/clay composite bio-based polymer blends
Autores e instituciones de adscripción	Pech-Cohuo SC [1]; Dzul Cervantes MAA [2]; Pérez Pacheco E [2]; Rosado JAC [2]; Chim Chi YA [2]; Ríos Soberanis CR [3]; Cuevas Carballo ZB [4]; Uc Cayetano EG [5]; Can Herrera LA [2]; Ortiz Fernández A [2]; Collí Pacheco JP [4]; Mina Hernández JH [6]; Pérez Padilla Y [5] [1] Universidad Politécnica de Yucatán, Tablaje Catastral 7193, Carretera, Mérida-Tetiz Km.4.5, C.P. 97357, Mérida, Yucatán, Mexico. [2] Tecnológico Nacional de México, Campus Instituto Tecnológico Superior de Calkiní, Cuerpo Académico Bioprocesos, Av. Ah Canul SN por Carretera Federal, C.P. 24900, Calkiní, Campeche, Mexico. [3] Centro de Investigación Científica de Yucatán, A.C., Unidad de Materiales, Calle 43, No. 130 x 32 y 34, Colonia Chuburná de Hidalgo, C.P 97205, Mérida, Yucatán, Mexico. [4] División Académica Multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, Carretera Estatal Libre Villahermosa-Comalcalco Km. 27+000 s/n Ranchería Ribera Alta, C.P. 86205, Jalpa de Méndez, Tabasco, Mexico. [5] Facultad de Ingeniería Química, Universidad Autónoma de Yucatán, Periférico Norte Kilómetro, 33.5, Tablaje Catastral 13615, Chuburná de Hidalgo Inn, 97302, Mérida, Yucatán, Mexico. (2 authors) [6] Grupo de Materiales Compuestos, Universidad del Valle, Calle 13 No. 100-00, 76001, Cali, Colombia

Resumen	In this study, thermoplastic starch (TPS) biofilms were developed using starch isolated from the seeds of *Melicoccus bijugatus* (huaya) and reinforced with bentonite clays at concentrations of 1%, 3%, and 5% by weight. Novelty of this research lies in utilizing a non-conventional starch source and enhancing properties of TPS through clay reinforcement. FTIR analysis verified bentonite's nature of clays, while SEM analysis provided insights into morphology and agglomeration behavior. Key findings include a notable increase in biofilm thickness and elastic modulus with higher clay content. Specifically, tensile strength of biofilms improved from 2.5 MPa for pure TPS to 5.0 MPa with 5% clay reinforcement. The elastic modulus increased from 25 MPa (TPS) to 60 MPa (5% clay). Thermal stability also showed enhancement, with initial degradation temperature increasing from 110 °C for pure TPS to 130 °C for TPS with 5% clay. Water vapor permeability (WVP) tests demonstrated a decrease in WVP values from 4.11×10^{-10} g m^{-1} s^{-1} Pa^{-1} for pure TPS to 2.09×10^{-10} g m^{-1} $s^{-1} \cdot Pa^{-1}$ for TPS with 5% clay, indicating a significant barrier effect due to clay dispersion. These results suggest that biofilms based on huaya starch and reinforced with bentonite clay have considerable potential for sustainable food packaging applications, offering enhanced mechanical and barrier properties.
Palabras claves	Clays; Thermoplastic starch; *Melicoccus bijugatus*; Biofilms; Food packaging

Revista	**FUNCTIONAL MATERIALS LETTERS**
ISSN	1793-6047
DOI	https://doi.org/10.1142/S1793604725510063
Título del Artículo	Effect of Cu and MWCNT doping in ZrO_2 for visible light photodegradation of methylene blue
Autores e instituciones de adscripción	S. Pérez Arévalo [1]; L. Rojas Blanco [1]; T. G. Sánchez [1]; F. Servín De Dios [2]; B. L. Pérez Escobar [1]; E. Ramírez Morales [1] [1] Universidad Juárez Autónoma de Tabasco, Avenida Universidad S/N, Zona de la Cultura, Col. Magisterial, Villahermosa, Centro, Tabasco 86040, México [2] Área Académica de Ciencias de la Tierra y Materiales, Instituto de Ciencias Básicas e Ingeniería, Universidad Autónoma del Estado de Hidalgo, Carretera Pachuca-Tulancingo km. 4.5, Mineral de la Reforma, 42184 Hidalgo, México
Resumen	Compounds Cu/ZrO_2 and Cu/MWCNTs/ZrO_2 were obtained from doping zirconium oxide with copper and multiwall carbon nanotubes (MWCNTs) using the sol–gel. For the synthesis, zirconium tetrabutoxide was used as a precursor and the obtained powders were thermally treated at 600ººC. The powders were characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM), UV–Visible and FTIR Spectroscopy. The photocatalytic tests were carried out with methylene blue as a contaminant. The compounds showed tetragonal phase Cu doped and Cu/MWCNTs doped, respectively. The absorbance difference between the ZrO_2 compound and the doped ones showed absorption bands at 2.47 eV attributed to the d–d transition of the Cu_2+ ions and at 5.6 eV, attributed to the direct band-to-band transition of the ZrO_2 band gap. The compound that presented the best photocatalytic activity is Cu/MWCNTs/ZrO_2.
Palabras claves	ZrO^2; photodegradation; methylene blue; carbon nanotubes.

Revista	**NUTRIENTS**
ISSN	eISSN:2072-6643
DOI	https://doi.org/10.3390/nu16142187
Título del Artículo	Effect of Early Time-Restricted Eating on Metabolic Markers and Body Composition in Individuals with Overweight or Obesity
Autores e instituciones de adscripción	Dalila Rubí Mena Hernández [1]; Guadalupe Jiménez-Domínguez [2]; José D. Méndez [3]; Viridiana Olvera-Hernández [1]; Mirian C. Martínez López [1]; Crystell G. Guzmán Priego [1]; Zeniff Reyes López [1]; Meztli Ramos García [1]; Isela E. Juárez Rojop [1]; Selene S. Zavaleta Toledo [2]; Jorge L. Ble Castillo [1] [1] Centro de Investigación, División Académica de Ciencias de la Salud (DACS), Universidad Juárez Autónoma de Tabasco (UJAT), Villahermosa 86150, Mexico [2] Departamento de Medicina Interna, Hospital General de Zona No. 46, Instituto Mexicano del Seguro Social (IMSS), Villahermosa 86060, Mexico [3] Hospital de Cardiología, Centro Médico Nacional Siglo XXI, Instituto Mexicano del Seguro Social (IMSS), Ciudad de México 06703, Mexico

Resumen	This study aimed to evaluate the effect of early time-restricted eating (eTRE) on metabolic markers and body composition in individuals with overweight or obesity. Seventeen subjects completed a randomized, crossover, and controlled clinical trial. Twelve women and five men participated, with a mean age of 25.8 ± 10.0 years and a BMI of 32.0 ± 6.3 kg/m^2. The eTRE intervention included 16 h of fasting (3:00 pm to 7:00 am) and 8 h of *ad libitum* eating (7:00 am to 03:00 pm) (16:8). The trial included four weeks of interventions followed by a four-week washout period. Body weight, waist and hip circumferences, and body composition measurements were taken. Additionally, a venous blood sample was collected for biochemical determinations. In a before–after analysis, eTRE induced a reduction in BW and BMI in women but this was not significant when compared to the control group. eTRE did not modify any other anthropometric measurements, fasting biochemical parameters, glycemic and insulinemic responses, blood pressure, or subjective appetite. In conclusion, eTRE did not induce beneficial effects on the glycemic and lipid metabolisms, body composition, subjective appetite, or blood pressure. These findings may be attributed to the special characteristics of the population and the short intervention period
Palabras claves	Early time-restricted eating; overweight; obesity; metabolic markers; body composition

Revista	**LATIN AMERICAN JOURNAL OF AQUATIC RESEARCH**
ISSN	0718-560X
DOI	http://dx.doi.org/10.3856/vol52-issue3-fulltext-3183
Título del Artículo	Effect of shelters on the growth and cultivation performance of the endemic snail, *Pomacea patula catemacensis*, cultured in a recirculating system during its grow-out
Autores e instituciones de adscripción	César Linton Izquierdo [1]; Isabel Jiménez García [1]; Leonardo I. Navarro Angulo [2]; Ignacio A. Pérez Legaspi [1]; Luis A. Ortega Clemente [1]; Carlos R. Rojas García [3] [1] División de Estudios de Posgrado e Investigación, Instituto Tecnológico de Boca del Río. Tecnológico Nacional de México, Veracruz, México [2] División Académica Multidisciplinaria de los Ríos, Universidad Juárez Autónoma de Tabasco. Tabasco, México [3] Department of Biological Sciences, University of Bergen, Bergen, Norway
Resumen	This study describes the process of *Pomacea patula catemacensis* grow-out in outdoor tanks. Experimental juvenile snails (1.5-2 months old) obtained from wild breeding snails were reared using a recirculating aquaculture system (RAS). The present study focused on increasing the surface area of growth tanks to be used by snails without affecting their growth and survival by adding shelters throughout the water column, which also worked to harbor snails. Two treatments were tested; T1: shelters made with curved clay tiles, T2: curved PVC shelters, and control (without shelters) in triplicate. The stocking density was set at 420 ind m^{-2} in tanks with 1 m^3 total volume, and the culture period was 150 days. The final weight of the snails was significantly higher in control and PVC shelter groups (9.14 ± 2.2 and 8.83 ± 2.31 g, respectively), with PVC shelters showing the highest productivity in total biomass (12.03 ± 0.86 kg tank^{-1}, $P < 0.05$). Final survival (%) was not significantly different among treatments (56.49 ± 1.62 to 58.05 ± 0.62).
Palabras claves	*Pomacea patula catemacensis*; snail fattening; artificial substrates; gastropod aquaculture; outdoor aquatic systems; Lake Catemaco

Revista	**LATIN AMERICAN JOURNAL OF AQUATIC RESEARCH**
ISSN	0718-560X
DOI	http://dx.doi.org/10.3856/vol52-issue2-fulltext-3122
Título del Artículo	Effect of the combination of fluoxymesterone and a commercial blend of additives on the sex proportion, growth, and survival of Nile tilapia (*Oreochromis niloticus*) fry
Autores e instituciones de adscripción	José Guillermo Nieto Gómez [1]; Uriel Rodríguez Estrada [2,3]; José Manuel Juárez Barrientos [4]; Juan Pablo Alcántar Vázquez [1]; José Manuel Ramírez Ochoa [1]; Julio Alberto Sánchez José [1] [1] Laboratorio de Acuicultura, DES: Ciencias Agropecuarias, Universidad del Papaloapan (UNPA). Loma Bonita, Oaxaca, México [2] Laboratorio de Fisiología en Recursos Acuáticos, División Académica de Ciencias Biológicas. Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México

Autores e instituciones de adscripción	[3] Consejo Nacional de Ciencia y Tecnología (CONAHCYT), IxM, Ciudad de México, México [4] Laboratorio de Bioquímica y Mejoramiento Genético, DES: Ciencias Agropecuarias. Universidad del Papaloapan (UNPA), Loma Bonita, Oaxaca, México
Resumen	In the commercial culture of Nile tilapia (*Oreochromis niloticus*), monosex, all-male populations obtained through steroid sex reversal is the most commercially used method to eliminate unwanted reproduction and increase final productive and economic yield. However, the rapid growth of Nile tilapia culture has led, in some regions, to an increase in infectious diseases and mortality in all stages of commercial culture. To reduce this, without the abuse of antibiotics or similar substances, feed additives are currently used in all stages, including the fry period, during the sex reversal process. The objective of this work was to evaluate the effect of synthetic steroid Fluoxymesterone (FM) at various concentrations in combination with a commercial Blend of additives (BA) on the percentage of males, growth, and survival of Nile tilapia fry. Five treatments (FM20, FM5+BA, FM10+BA, FM20+BA, and BA+FM20) and a control group were evaluated. Treatments differ in the order in which the commercial blend (2 g) was added and the FM concentration (5, 10, and 20 mg). The feeding trial lasted for 30 days using a sexually undifferentiated population of Nile tilapia. The results showed a decrease in the percentage of males in all treatments supplemented with the BA, compared to the FM20 treatment (containing 20 mg without BA). Growth and survival were positively affected by the inclusion of the BA in all treatments, showing higher values than those observed in the control group. Further studies are necessary to determine the FM-BA interaction.
Palabras claves	*Oreochromis niloticus*; sex reversal; fluoxymesterone; commercial blend; growth; survival

Revista	**MOLECULAR AND CELLULAR BIOCHEMISTRY**
ISSN	1573-4919
DOI	https://doi.org/10.1007/s11010-023-04747-7
Título del Artículo	Effects of IL-6/IL-6R axis alterations in serum, plasma and cerebrospinal fluid with the schizophrenia: an updated review and meta-analysis of 58 studies
Autores e instituciones de adscripción	Thelma Beatriz González Castro [1]; Carlos Alfonso Tovilla Zárate [2]; Isela Esther Juárez Rojop [3]; Yazmín Hernández Díaz [1]; María Lilia López Narváez [4]; Rosa Felicita Ortiz Ojeda [1] [1] División Académica Multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, Jalpa de Méndez, Tabasco, México. [2] División Académica Multidisciplinaria de Comalcalco, Universidad Juárez Autónoma de Tabasco, Comalcalco, Tabasco, México. [3] División Académica de Ciencias de la Salud, Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México. [4] Hospital Chiapas "Dr. Jesús Gilberto Gómez Maza", Tuxtla Gutiérrez, Chiapas, México.
Resumen	Studies investigating the association between IL-6/IL-6R axis and schizophrenia (SZ) susceptibility found inconsistent data. To reconcile the results, a systematic review followed by a meta-analysis was performed to assess the associations. This study followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. A comprehensive search of the literature was carried out in July 2022 using electronic databases PubMed, EBSCO, Science Direct, PsychInfo, and Scopus. Study quality was assessed by the Newcastle–Ottawa scale. Pooled standard mean difference (SMD) with 95% confidence interval (CI) was calculated by fixed-effect or random-effect model analysis. Fifty-eight studies were identified, including 4,200 SZ patients and 4,531 controls. Our meta-analysis results showed an increase of IL-6 levels in plasma, serum, or CSF and decreased IL-6R levels in serum in patients under treatment. Further studies are needed to better elucidate the correlation between the IL-6/IL-6R axis and the schizophrenia.
Palabras claves	Association; Cytokine; Interleukin; Receptor; Schizophrenia.

Revista	**ENVIRONMENTAL BIOLOGY OF FISHES**
ISSN	1573-5133
DOI	10.1007/s10641-024-01555-w
Título del Artículo	Effects of plasticity and genetic divergence in phenotypic trait expression of sulfide spring fishes

Autores e instituciones de adscripción	Madison Nobrega [1]; Ryan Greenway [1]; Courtney N. Passow [1]; Lenin Arias Rodríguez [2]; Michael Tobler [3,4] [1] Division of Biology, Kansas State University, Manhattan, KS, 66506, USA [2] División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México [3] Department of Biology, University of Missouri—St. Louis, St. Louis, MO, 63121, USA [4] WildCare Institute, St. Louis Zoo, St. Louis, MO 63110. USA
Resumen	Natural environments vary, and organisms cope with this variation in two general ways: local adaptation and phenotypic plasticity, although these strategies often overlap and interact. This study explored how local adaptation, phenotypic plasticity, and their interactions shaped phenotypic variation in populations of *Poecilia mexicana*, an extremophile fish living in adjacent but ecologically divergent habitats. By comparing populations from the wild with fish raised in a common-garden environment, we evaluated how genetic differentiation between populations and plasticity contributed to the phenotypic variation observed in nature. We quantified variation in the size of six organs (brain, eyes, gills, heart, liver, and gastrointestinal tract), routine metabolic rate, and body shape. We found evidence for genetic differences between populations impacting the expression of the majority of traits, in addition to or in interaction with phenotypic plasticity and other predictor variables. Overall, our results suggest that trait divergence between populations was at least in part driven by evolutionary change and not just merely by plasticity induced by environmental differences between habitats. Future studies will have to rigorously test whether evolutionary divergence was caused by natural selection and what traits represent adaptations to the different ecological conditions.
Palabras claves	Adaptation; Extreme environments; Genetic differentiation; Phenotypic plasticity; *Poecilia mexicana*; Poeciliidae

Revista	**REVISTA MEXICANA DE FÍSICA**
ISSN	eISSN:2683-2224
DOI	https://doi.org/10.31349/RevMexFis.70.041001
Título del Artículo	Effects of structural disorder on the change in refractive index of a single d-doped system in GaAs
Autores e instituciones de adscripción	Humberto Noverola Gamas [1]; Fermín Martínez Solís [1]; Outmane Oubram [2] [1] División académica de Ingeniería y Arquitectura, Universidad Juárez Autónoma de Tabasco, Carretera Cunduacán-Jalpa de Méndez Km. 1 Col. La Esmeralda, Cunduacán, 86680, México e-mail: noverola86@gmail.comb [2] Facultad de Ciencias Químicas e Ingeniería, Universidad Autónoma del Estado de Morelos. Av. Universidad 1001, Col. Chamilpa 62209, Cuernavaca, Morelos, México, email: oubram@uaem.mx
Resumen	Starting from effective mass theory and the Thomas-Fermi (TF) model, the potential profile for a simple delta-doped system in n-type Gallium Arsenide (GaAs) has been established. By solving the Schrödinger equation associated with the system, the eigenvalues and eigenfunctions of the potential profile have been calculated, thus determining its electronic structure. So, with the Density Matrix theory, the change in the linear and nonlinear refractive index (CRI) of the system have been determined. In By introducing a disorder term in the system (ζ), it is possible to calculate numerically the changes in the electronic structure and nonlinear optical properties. Here, it has been determined that with ζ values around 10% associated with the density of impurities (N_{2D}), the change in the linear and nonlinear refractive index does not undergo significant changes. On the other hand, On the other hand, as the disorder in the impurity density introduced into the semiconductor material increases, the optical property behavior is completely lost. Finally, we note that when introducing a disorder term in the laser intensity, the optical properties do not change significantly. This theoretical study could predict the effect of structural disorder on the behavior of CRI in delta-doped devices during their synthesis.
Palabras claves	Delta doping; nonlinear optics; gallium arsenide; structural disorder; change in the refractive index

Revista	**JOURNAL OF BACK AND MUSCULOSKELETAL REHABILITATION**
ISSN	1053-8127
DOI	https://doi.org/10.3233/BMR-230173
Título del Artículo	Efficacy of ozone injections for reducing musculoskeletal pain in comparison with corticosteroid injections: A systematic review and meta-Analysis
Autores e instituciones de adscripción	Arias Vázquez, Pedro Iván [1]; Guzzardo, Mauro Nicolás [2]; Guzzardo, Duilio Román [2]; Castillo Ávila, Rosa Giannina [3]; Tovilla Zárate, Carlos Alfonso [1]; Ake Montiel, Miguel Ángel Nazul [4] [1] Department of Rehabilitation, Juarez Autonomous University of Tabasco, Villahermosa, Mexico. [2] Team of Formation and Research in Pain (EFID in Spanish), National University of Rosario, Rosario, Argentina. [3] Division of Health Sciences, Juarez Autonomous University of Tabasco, Villahermosa, Mexico. [4] Advanced Center of Sports Medicine, Autonomous University of Yucatan, Mérida, Mexico
Resumen	**Background:** Corticosteroid injections are frequently used in the short-term treatment of musculoskeletal pain, but their use is controversial as repeated exposures to corticosteroids can lead to deleterious effects on musculoskeletal tissue. Ozone injections have been proposed as a possible treatment for musculoskeletal pain; however, their effectiveness has not been compared with corticosteroids. **Objective:** To evaluate the effectiveness of ozone injections for reducing pain in individuals with musculoskeletal pain in comparison with corticosteroid injections through a meta-analysis. **Methods:** An online systematic search was performed using electronic databases up to September 2023. We searched for studies that compared corticosteroid injections with ozone injections in the treatment of musculoskeletal pain of diverse origins. **Results:** Eleven studies were included comprising a total of 534 individuals. In the overall pooled analysis, a pain reduction in favor of corticosteroid injections was found in the short term (d= 0.31, 95% CI 0.01 to 0.60, p (z) 0.04, I2 = 32%). In the medium term, no significant differences were found in reducing pain between groups (d=-0.17, 95% CI -0.42 to 0.07, p (z) 0.15, I2 = 0%). **Conclusions:** Our results suggest that corticosteroids injections are more effective in reducing musculoskeletal pain in the short term, but equally effective in the medium term when compared with ozone injections. Nonetheless, better-quality clinical trials are necessary to corroborate these results.
Palabras claves	Musculoskeletal diseases, osteoarthritis, tendinopathy, nerve compression syndromes

Revista	**INTERNATIONAL JOURNAL OF MODERN PHYSICS D**
ISSN	0218-2718
DOI	https://doi.org/10.1142/S0218271824410049
Título del Artículo	Emergent universality of free fall from quantum mechanics
Autores e instituciones de adscripción	Juan A. Cañas [1]; A. Martín Ruiz [1]; J. Bernal [2] [1] Instituto de Ciencias Nucleares, Universidad Nacional Autónoma de México, 04510 México, Ciudad de México, México [2] División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, 86690 Cunduacán, Tabasco, México
Resumen	Classical and quantum mechanical descriptions of motion are fundamentally different. The Universality of Free Fall (UFF) is a distinguishing feature of the classical motion (which has been verified with astonishing precision), while quantum theory tell us only about probabilities and uncertainties thus breaking the UFF. There are strong reasons to believe that the classical description must emerge, under plausible hypothesis, from quantum mechanics. In this paper, we show that the UFF is an emergent phenomenon: the coarse-grained quantum distribution for high-energy levels leads to the classical distribution as the lowest order plus quantum corrections. We estimate the size of these corrections on the Eötvös parameter and discuss the physical implications.
Palabras claves	Universality of free fall; classical limit; quantum bouncer

Revista	**EDUCACIÓN MEDICA**
ISSN	1575-1813
DOI	https://doi.org/10.1016/j.edumed.2024.100920

Título del Artículo	Emotional intelligence and burnout in medical students
Autores e instituciones de adscripción	Kevin Obed Tolentino Ricoy [1]; Josefina Salomón Cruz [2]; Ángel Alberto Puig Lagunes [3] [1] Universidad Juárez Autónoma de Tabasco, Academic Division of Health Sciences, Av. Gregorio Méndez Magaña 2838-A, Tamulté, 86100 Villahermosa, Tabasco, Mexico [2] Academid of the Universidad Juárez Autónoma de Tabasco, Academic Division of Health Sciences, Av. Gregorio Méndez Magaña 2838-A, Tamulté, 86100 Villahermosa, Tabasco, Mexico [3] Academic of the Facultad de Medicina, Universidad Veracruzana, Minatitlán campus, Veracruz, Mexico. Managua s/n, Nueva Mina, CP 96760 Minatitlán, Veracruz, Mexico
Resumen	**Introduction:** Medical students have a high prevalence of Academic Burnout Syndrome (ABS); however, few studies have analyzed the protective factors of this syndrome in this population. **Objective:** To determine the association of emotional intelligence (EI) with ABS in medical students. **Methods:** A cross-sectional, descriptive, and correlational study was conducted on medical students using Google Forms to respond to the Trait Meta-Mood Scale, and the Maslach Burnout Inventory–General Survey for Students to determine EI and ABS, respectively. **Results:** Between 36% and 50% of students have insufficient attention, clarity, and emotional repair. Furthermore, 13% of students were diagnosed with ABS. It was found an association between subscales of EI and the ABS. It was observed that women got lower punctuation on EI and showed a higher prevalence of ABS.**Conclusions:** In this population, the students with higher abilities of EI showed the lowest symptomatology of ABS, it is necessary to include training in the progress of abilities of EI inside of study programs.
Palabras claves	University students; Medicine; Academic burnout; Emotional intelligence

Revista	**OPTIK**
ISSN	0030-4026
DOI	https://doi.org/10.1016/j.ijleo.2024.171753
Título del Artículo	Enhanced photocatalytic activity of $FeSO_4$ in a ZnO photocatalyst with H_2O_2 for dye degradation
Autores e instituciones de adscripción	D.G. Domínguez Talamantes [1]; D. Vargas Hernández [2]; J.T. Hernández Oloño [1]; E. Rodríguez Castellón [3]; M. Arellano Cortaza [4]; S.J. Castillo [5]; J.C. Tánori Córdova [1] [1] Departamento de Investigación en Polímeros y Materiales, Universidad de Sonora, Boulevard Luis Encinas Johnson y Rosales S/N, Hermosillo, Sonora 83000, Mexico [2] CONAHCYT-Universidad de Sonora, Boulevard Luis Encinas Johnson y Rosales S/N, Hermosillo, Sonora 83000, Mexico [3] Departamento de Química Inorgánica, Cristalografía y Mineralogía, Facultad de Ciencias, Universidad de Málaga, Campus de Teatinos, Málaga 29071, Spain [4] Universidad Juárez Autónoma de Tabasco, Avenida Universidad S/n Zona de La Cultura, Colonia Magisterial, CP, Villahermosa Centro, Tabasco 86690, Mexico [5] Departamento de Investigación en Física, Universidad de Sonora, Boulevard Luis Encinas Johnson y Rosales S/N, Hermosillo, Sonora 83000, Mexico
Resumen	In this study, the photocatalytic degradation efficiency of ZnO synthesized by a hydrothermal method and iron-supported ZnO catalysts by an impregnation method, dried (D) and calcined (C), was evaluated, through the degradation of methylene blue (MB) and methyl orange (MO) molecules under UV irradiation. The catalysts were characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM), X-ray photoelectron spectroscopy (XPS), N_2 adsorption-desorption, and UVvisible diffuse reflectance spectroscopy (DRS). XRD showed that $FeSO_4$ is supported on ZnO, and the XPS study revealed higher concentrations of hydroxyl groups and Fe^{3+} for the dried catalyst. The bandgap energies were 3.24, 3.23, and 3.19 eV for ZnO, Fe/ZnO D and Fe/ZnO C, respectively. The results revealed that Fe/ZnO D with H_2O_2 exhibited a higher photocatalytic degradation efficiency than ZnO, achieving 97% and 99% degradation for MB and MO at 10 min, which implies that the integrated iron in ZnO serves as an electron-hole separator. In addition, the catalyst has a larger BET specific area, the presence of hydroxyl groups and sulfate ions on the surface of the catalyst with holes forms hydroxyl radicals (•OH), and the presence of Fe^{3+} on the surface catalyst with H_2O_2 produces more •OH radicals. •OH radicals are the major oxidation species in this process, which promotes the degradation of dyes. The photocatalytic dye degradation efficiency was also evaluated for various catalyst doses, dye concentrations and solution pH values. Moreover, the stability of the catalyst over repeated cycles of dye treatment was demonstrated.
Palabras claves	Heterogeneous photo Fenton; Photocatalyst; Methylene blue; Methyl orange; Scavengers

Revista	**NEW ZEALAND JOURNAL OF AGRICULTURAL RESEARCH**
ISSN	0028-8233
DOI	https://doi.org/10.1080/00288233.2024.2406522
Título del Artículo	Enhancing the quality of haylage from tropical grasses with xylanase enzyme
Autores e instituciones de adscripción	Ana Beatriz de Almeida Duarte [1]; Tairon Pannunzio Dias Silva [1]; Wesleyson Cristian Correa Viana [1]; Samara Costa Batista [1]; Romilda Rodrigues do Nascimento [2]; Antonio Leandro Chaves Gurgel [1]; Marcos Jácome de Araújo [1]; Leílson Rocha Bezerra [2]; Ricardo Loiola Edvan [3]; Alfonso Juventino Chay-Canul [4]; Luis Carlos Vinhas Ítavo [5]; Gelson dos Santos Difante [5] [1] Campus Professora Cinobelina Elvas, Federal University of Piauí, Bom Jesus, Brazil [2] Health and Rural Technology Center, Federal University of Campina Grande, Campina Grande, Brazil [3] Center of Agricultural Sciences, Federal University of Piauí, Teresina, Brazil [4] Academic Division of Agricultural Sciences, Juárez Autonomous University of Tabasco, Villahermosa, Mexico [5] College of Veterinary Medicine and Animal Science, Federal University of Mato Grosso do Sul, Campo Grande, Brazil
Resumen	The objective was to evaluate the effect of adding xylanase on the aerobic stability, chemical composition, fermentative, and microbiological parameters of tropical grasses preserved as haylage. A completely randomised experimental design with a 4 × 2 factorial scheme was used, involving four cultivars of haylage grasses (*Andropogon gayanus* cv. Planaltina, *Panicum maximum* cv. Mombasa, *Panicum maximum* cv. Massai, and *Brachiaria brizantha* cv. Marandu) with and without xylanase enzyme. There was no interaction between xylanase and cultivar in pH values at haylage opening. Aerobic stability remained intact during 120 h of air exposure. Cultivar significantly affected lactic and propionic acid content, with greater fermentation in Mombasa grass and higher butyric acid in Massai grass. Differences ($P<0.001$) in DM content were noted, with Andropogon, Massai and Marandu grasses showing greatest values. Andropogon grass, with and without xylanase, had the highest ($P<0.05$) crude protein content. Marandu grass haylage had the lowest neutral detergent fibre ($P<0.05$) and acid detergent fibre ($P<0.001$) content. Andropogon grass haylage with xylanase had lower ($P<0.001$) yeast amounts. Therefore, the xylanase enzyme dose (1.8 g kg^{-1} DM) did not significantly alter the chemical composition, fermentative parameters, or aerobic stability of the haylage samples across different tropical grass cultivars.
Palabras claves	C4 grasses; fibrolytic enzyme; forage conservation; fermentation quality; microbiological profile

Revista	**PLOS ONE**
ISSN	1932-6203
DOI	https://doi.org/10.1371/journal.pone.0296887
Título del Artículo	Eosinophils of patients with localized and diffuse cutaneous *leishmania*sis: Differential response to *Leishmania mexicana*, with insights into mechanisms of damage inflicted upon the parasites by eosinophils
Autores e instituciones de adscripción	Norma Salaiza Suazo [1]; Roxana Porcel Aranibar [1]; Isabel Cristina Cañeda Guzmán [1]; Adriana Ruiz Remigio [1]; Jaime Zamora Chimal [1]; José Delgado Domínguez [1]; Rocely Cervantes Sarabia [1]; Georgina Carrada Figueroa [2]; Baldomero Sánchez Barragán [3]; Víctor Javier Leal Ascencio [4]; Armando Pérez Torres [5]; Héctor A Rodríguez Martínez [1]; Ingeborg Becker [1] [1] Facultad de Medicina, Unidad de Investigación en Medicina Experimental, Universidad Nacional Autónoma de México, Ciudad de México, México [2] División Académica de Ciencias de la Salud, Universidad Juárez Autónoma de Tabasco (UJAT), Tabasco, México [3] Escuela de Medicina, Universidad Juárez Autónoma de Tabasco (UJAT), Tabasco, México Investigation, Resources [4] Hospital Regional de Alta Especialidad Dr. Juan Graham, Secretaría de Salud del Estado de Tabasco, Villahermosa, Tabasco, México [5] Departamento de Biología Celular y Tisular, Facultad de Medicina, Universidad Nacional Autónoma de México, Ciudad de México, México
Resumen	Eosinophils are mainly associated with parasitic infections and allergic manifestations. They produce many biologically active substances that contribute to the destruction of pathogens through the degranulation of microbicidal components and inflammatory tissue effects. In *leishmania*sis, eosinophils have been found within inflammatory infiltrate with

Resumen	protective immunity against the parasite. We analyzed the responses of eosinophils from patients with localized (LCL) and diffuse (DCL) cutaneous *leishmania*sis, as well as from healthy subjects, when exposed to *Leishmania mexicana*. All DCL patients exhibited blood eosinophilia, along with elevated eosinophil counts in non-ulcerated nodules. In contrast, only LCL patients with prolonged disease progression showed eosinophils in their blood and cutaneous ulcers. Eosinophils from DCL patients secreted significantly higher levels of IL-6, IL-8, and IL-13, compared to eosinophils from LCL patients. Additionally, DCL patients displayed higher serum levels of anti-*Leishmania* IgG antibodies. We also demonstrated that eosinophils from both LCL and DCL patients responded to *L. mexicana* promastigotes with a robust oxidative burst, which was equally intense in both patient groups and significantly higher than in healthy subjects. Coincubation of eosinophils (from donors with eosinophilia) with *L. mexicana* promastigotes *in vitro* revealed various mechanisms of parasite damage associated with different patterns of granule exocytosis: 1) localized degranulation on the parasite surface, 2) the release of cytoplasmic membrane-bound "degranulation sacs" containing granules, 3) release of eosinophil extracellular traps containing DNA and granules with major basic protein. In conclusion, eosinophils damage *L. mexicana* parasites through the release of granules via diverse mechanisms. However, despite DCL patients having abundant eosinophils in their blood and tissues, their apparent inability to provide protection may be linked to the release of cytokines and chemokines that promote a Th2 immune response and disease progression in these patients.
Palabras claves	Eosinophilia; Cutaneous Leishmaniasis; *Leishmania Mexicana*; Eosinophils; Basic Proteins; Parasitic Diseases; Pheromone Traps

Revista	**TROPICAL AND SUBTROPICAL AGROECOSYSTEMS**
ISSN	1870-0462
DOI	http://doi.org/10.56369/tsaes.5054
Título del Artículo	Equations for body weight adjustments in black belly ewe lambs
Autores e instituciones de adscripción	Samuel Vázquez Jiménez [1]; Daniel Vidal Ramírez [1]; Rosario Salazar Cuytun [1]; Ignacio Vázquez Martínez [1.2]; Enrique Camacho Pérez [3]; Antonio Leandro Chaves Gurgel [4]; Germani Adrián Muñoz Osorio [1]; Alfonso J. Chay Canul [1] [1] Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias Agropecuarias, Colonia Centro Tabasco, México. C.P. 86280. [2] Benemérita Universidad Autónoma de Puebla, Complejo Regional Norte, Av. Universidad s/n, Barrio Benito Juárez, Tetela de Ocampo, Puebla, México. CP 73640. [3] Facultad de Ingeniería. Universidad Autónoma de Yucatán, Av. Industrias No Contaminantes por anillo periférico norte s/n, Mérida, Yucatán, México. C.P. 97230. [4] Campus Professora Cinobelina Elvas, Universidade Federal do Piauí, Bom Jesus, Piauí, Brasil. PI -CEP: 64049-550.
Resumen	**Background.** As body weight (BW) is rarely determined on fasted animals in most production systems, the need to develop accurate mathematical models for adjusting BW has been identified. **Objective.** To evaluate models for estimating shrunk body weight (SBW) and empty body weight (EBW) in Black Belly growing ewe lambs raised in tropical conditions. **Methodology.** Data of sixty Black Belly ewe lambs, between four to eight months of age with a mean BW of 26.55± 3.92 kg (± SD) were used. The SBW was estimated based on the BW without fasting (fed) and the EBW based on SBW through three models: 1. Linear; 2.-Linear without intercept and 3.- Exponential. The predictive capacity of the models was evaluated by cross-validation. **Results.** The correlation coefficients between BW and SBW and SB and EBW were high (r = 0.94; <0.0001). The coefficients of determination (r2) for the equations between BW and SBW were 0.89 (P<0.001); and 0.86 (P<0.001) for the relationship between SBW and EBW. Based on the AIC (26.81) Eq. 2 described the relationship between BW and SBW better than Eq. 1, (AIC = 28.44) and Eq. 3 (AIC =28.35). The final model to estimate SBW as a function of BW was: SBW (kg): 0.96 (±0.001***) × BW. With respect to the SBW and EBW ratio, Equation 5, was better than the linear Eq. 4, (AIC = 33.01) and Eq. 6 (AIC = 33.35). The following model was: EBW (kg): 0.81 (± 0.06***) × SBW. The cross-validation of the equation of the relationship between BW and SBW showed that Eq. 1 had a higher r2 (0.87), and lower RMSEP and MAE than Eq. 2 and Eq. 3. Also, the equation of the relationship between SBW and EBW the cross-validation revealed that Eqs. 4 and 6 had the higher r2 (0.82), and lower RMSEP and MAE and tended to be more accurate than Eq. 5. **Implications.** The results obtained in present study contributes to the development of mathematical models for more accurate body weight

Resumen	adjustments in tropical sheep. **Conclusion.** The equations developed and evaluated in the present study revealed that the linear relationship between BW and SBW, and the linear and exponential relationship between SBW and EBW can be used to body weight adjustments in growing Black Belly ewe lambs. It's worth noting that this confirms that the SBW can be calculated using an adjustment factor of 0.96 FBW.
Palabras claves	Empty body weight; hair sheep; sheep requirements; tropical conditions.

Revista	**DIVERSITY AND DISTRIBUTIONS**
ISSN	1366-9516
DOI	https://doi.org/10.1111/ddi.13831
Título del Artículo	Estimating species distribution from camera trap by-catch data, using jaguarundi (*Herpailurus yagouaroundi*) as an example
Autores e instituciones de adscripción	Bart J. Harmsen [1]; Sara Williams [1]; María Abarca [2]; Francisco Samuel Álvarez Calderón [3]; Daniela Araya Gamboa [1]; Hefer Daniel Ávila [1]; Mariano Barrantes Núñez [4]; Yaribeth Bravata de la Cruz [5]; Joleen Broadfield [1]; Valquíria Cabral Araújo [6,7]; Ana Patricia Calderón [1]; Franklin Castañeda [1]; Daniel Corrales Gutiérrez [1]; Bárbara do Couto Peret Dias [6];Paulo Henrique Dantas Marinho [8]; Allison L. Devlin [1];Barbara I. Escobar Anleu [1];Deiver Espinoza Muñoz [1];Helen J. Esser [9];Rebecca J. Foster [1];Carlos Eduardo Fragoso [6];Diana Friedeberg [1];Luis Alberto Herrera [1,10];Mircea G. Hidalgo Mihart [5];Rafael Hoogesteijn [1]; Patrick A. Jansen [9];Włodzimierz Jędrzejewski [2];Alejandro Jesús de la Cruz [1];Domingos de Jesus Rodrigues [11];Chris A. Jordan [12];Rugieri Juárez López [5];Vanessa Kadosoe [13];Marcella J. Kelly [14];Travis W. King [15];Giulia da Matta Nigro [6]; Darby K. T. McPhail [14]; Ninon Meyer [17]; Andrea Morales Rivas [18]; Vance Nepomuceno [14]; Rob B. Nipko [14]; Janaina Noronha [11]; Mariana de Oliveira Vasquez [6,19]; Paul Ouboter [13]; Evi A. D. Paemelaere [1,20]; Esteban Payán [1,21]; Thais Pereira dos Santos [22]; Roberto Salom Pérez [1]; Emma E. Sánchez [1]; Stephanie Santos Simioni [6]; Krzysztof Schmidt [23]; Diana Stasiukyans [1]; Fernando R. Tortato [1]; Ever Urbina Ruiz[4]; Gerald R. Urquhart [24] Wai Ming Wong [1]; Hugh Robinson [1] [1] Panthera Cooperation, New York, New York, USA. [2] Centro de Ecología, Instituto Venezolano de Investigaciones Científica IVIC, Caracas, Venezuela. [3] Fundación Naturaleza El Salvador, Colonia Escalón, San Salvador CP, El Salvador [4] No Association, Independent Researcher [5] División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, Mexico. [6] Associação Onçafari, Av. Magalhães de Castro, São Paulo-SP, Brazil. [7] Parque das Aves, Foz do Iguaçu-PR, Brazil. [8] Departamento de Ecologia, Universidade Federal do Rio Grande do Norte (UFRN), Natal, Rio Grande do Norte, Brazil [9] Wildlife Ecology and Conservation Group, Wageningen University & Research, Wageningen, The Netherlands. [10] Universidad Nacional Autónoma de Honduras del Valle de Sula, Tegucigalpa, Honduras [11] Universidade Federal de Mato Grosso, Postgraduate Program in Ecology and Biodiversity Conservation, Institute of Biosciencess. R. Quarenta e Nove, Cuiabá-MT, Brazil [12] Re: wild, Austin, Texas, USA 12Institute for Neotropical Wildlife and Environmental Studies, Paramaribo, Suriname [13] Institute for Neotropical Wildlife and Environmental Studies, Paramaribo, Suriname [14] Department of Fish and Wildlife Conservation, Virginia Tech, Blacksburg, Virginia, USA. [15] Washington State University, Mammal Spatial Ecology and Conservation. Lab, Pullman, Washington, USA. [16] Centro Nacional de Pesquisa e Conservação de Aves Silvestres (CEMAVE), Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio), Florianópolis, Santa Catarina, Brazil [17] Department of Ecology and Evolutionary Biology, University of Toronto, Toronto, Ontario, Canada [18] Asociación Territorios Vivos El Salvador, San Salvador, El Salvador. [19] Fundação Grupo Boticário de Proteção à Natureza, Guaraqueçaba-PR, Brazil [20] People and Wildlife Solutions, Lethem, Guyana [21] Wildlife Conservation Society, New York, USA [22] Curso de Ciências Biológicas, Universidade Federal do Vale do São Francisco (UNIVASF), Petrolina, Pernambuco, Brazil [23] Mammal Research Institute, Polish Academy of Sciences, Białowieża, Poland [24] Lyman Briggs College and the Department of Fisheries and Wildlife, Michigan State University, East Lansing, Michigan, USA

Resumen	**Aim** Planning conservation action requires accurate estimates of abundance and distribution of the target species. For many mammals, particularly those inhabiting tropical forests, there are insufficient data to assess their conservation status. We present a framework for predicting species distribution using jaguarundi (*Herpailurus yagouaroundi*), a poorly known felid for which basic information on abundance and distribution is lacking. **Location** Mesoamerica and South America.**Time Period** From 2003 to 2021.**Taxa** *Herpailurus yagouaroundi*. **Methods** We combined camera-trap data from multiple sites and used an occupancy modelling framework accounting for imperfect detection to identify habitat associations and predict the range-wide distribution of jaguarundis. **Results** Our model predicted that the probability of jaguarundi occupancy is positively associated with rugged terrain, herbaceous cover, and human night-time light intensity. Jaguarundi occupancy was predicted to be higher where precipitation was less seasonal, and at intermediate levels of diurnal temperature range. Our camera data also revealed additional detections of jaguarundis beyond the current International Union for Conservation of Nature (IUCN) range distribution, including the Andean foothills of Colombia and Bolivia. **Main Conclusion** Occupancy was predicted to be low throughout much of Amazonian lowlands, a vast area at the centre of jaguarundi known range. Further work is required to investigate whether this area represents sub-optimal conditions for the species. Overall, we estimate a crude global jaguarundi population of 35,000 to 230,000 individuals, covering 4,453,406 km2 of Meso- and South America at the 0.5 probability level of occupancy. Our current framework allows for an initially detailed, well-informed species distribution that should be challenged and refined with improved habitat layers and additional records of jaguarundi detection. We encourage similar studies of lesser-known mammals, pooling existing by-catch data from the growing bank of camera-trap surveys around the world.
Palabras claves	By catch data - Camera trap - Felids - Neotropics - Occupancy modelling - Species distribution

Revista	**EUROPEAN JOURNAL OF PHARMACOLOGY**
ISSN	0014-2999
DOI	https://doi.org/10.1016/j.ejphar.2024.176616
Título del Artículo	Estradiol modulates the role of the spinal a_6-subunit containing $GABA_A$ receptors in female rats with neuropathic pain
Autores e instituciones de adscripción	Erick J. Rodríguez Palma [1]; Ana M. Islas Espinoza [1]; Itzel I. Ramos-Rodríguez [2]; Juan Miguel Pizaña Encarnación [1]; Miguel Á. Gutiérrez Agredano [1]; Ciciolil Morales Moreno [3]; Alonso Fernández Guasti [3]; Vinicio Granados Soto [1] [1] Neurobiology of Pain Laboratory, Departamento de Farmacobiología, Cinvestav, South Campus, Mexico City, Mexico [2] División Académica de Ciencias de la Salud, Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, Mexico [3] Departamento de Farmacobiología, Cinvestav, South Campus, Mexico City, Mexico
Resumen	The purpose of this study was to investigate the mechanisms underlying sex differences in the role of spinal α_6-subunit containing $GABA_A$ (α_6GABA_A) receptors in rats with neuropathic pain. Intrathecal 2,5-dihydro-7-methoxy-2-(4-methoxyphenyl)-3H-pyrazolo [4,3-c] quinoline-3-one (PZ-II-029, positive allosteric modulator of α_6GABA_A receptors) reduced tactile allodynia in female but not in male rats with neuropathic pain. PZ-II-029 was also more effective in females than males in inflammatory and nociplastic pain. Ovariectomy abated the antiallodynic effect of PZ-II-029 in neuropathic rats, whereas 17β-estradiol or 4,4′,4''-(4-propyl-[1H]-pyrazole-1,3,5-triyl) trisphenol (PPT), estradiol receptor-α agonist, restored the effect of PZ-II-029 in ovariectomized rats. Blockade of estradiol receptor-α, using MPP (1,3-bis(4-hydroxyphenyl)-4-methyl-5-[4-(2-piperidinylethoxy) phenol]-1H-pyrazole dihydrochloride), prevented the effect of 17β-estradiol on PZ-II-029-induced antiallodynia in ovariectomized neuropathic females. Nerve injury reduced α_6GABA_A receptor protein expression at the dorsal root ganglia (DRG) and spinal cord of intact and ovariectomized female rats. In this last group, reconstitution with 17β-estradiol fully restored its expression in DRG and spinal cord. In male rats, nerve injury reduced α_6GABA_A receptor protein expression only at the spinal cord. Nerve injury enhanced estradiol receptor-α protein expression at the DRG in intact non-ovariectomized rats. However, ovariectomy decreased estradiol receptor-α protein expression at the DRG. In the

Resumen	spinal cord there were no changes in estradiol receptor-α protein expression. 17β-estradiol restored estradiol receptor-α protein expression at the DRG and increased it at the spinal cord of neuropathic rats. These data suggest that 17β-estradiol modulates the expression and function of the α_6GABA_A receptor through its interaction with estradiol receptor-α in female rats.
Palabras claves	α_6-subunit containing $GABA_A$ receptor; Neuropathic pain; PZ-II-029; 17β-estradiol; Sex differences

Revista	**INTERNATIONAL JOURNAL OF DIABETES IN DEVELOPING COUNTRIES**
ISSN	1998-3832
DOI	https://doi.org/10.1007/s13410-023-01232-1
Título del Artículo	Evaluation of HbA1c levels as probable diagnostic of depression symptoms in Mexican individuals with type 2 diabetes mellitus
Autores e instituciones de adscripción	Isela Esther Juárez Rojop [1]; Gisselle Tovilla Vidal [1]; María Lilia López Narváez [2]; Carlos Alfonso Tovilla Zárate [2]; Esther Rodríguez Sánchez [3]; Thelma Beatriz González Castro [4]; Ana Fresán [5]; Dania Ramírez González [1]; Yazmín Hernández Díaz [4]; [1] Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias de La Salud, Gregorio Méndez 2838, Villahermosa, Comalcalco, Tabasco, Mexico [2] Universidad Juárez Autónoma de Tabasco, División Académica Multidisciplinaria de Comalcalco, Comalcalco, Tabasco, Mexico [3] Hospital de Alta Especialidad Gustavo A. Rovirosa Pérez, Secretaría de Salud, Villahermosa, Tabasco, Mexico [4] Universidad Juárez Autónoma de Tabasco, División Académica Multidisciplinaria de Jalpa de Méndez, Jalpa de Méndez, Tabasco, Mexico [5] Subdirección de Investigaciones Clínicas, Instituto Nacional de Psiquiatría Ramón de La Fuente Muñíz, Mexico City, Mexico
Resumen	**Background** Depression is present in individuals with type 2 diabetes mellitus. **Objective** We evaluated the sociodemographic, anthropometric, and clinical features of Mexican individuals with clinical depressive symptoms in order to identify predictors for depression symptoms; fi nally, we evaluated if HbA1c levels could be used as a probable diagnostic of depressive symptoms in individuals with type 2 diabetes mellitus. **Methods** The population studied consisted of 376 Mexicans with diabetes who were interviewed to collect information about comorbidities and habits. The evaluation of depressive symptoms was performed using the Hamilton scale. For a possible clinical association between HbA1c levels and depressive symptoms, we performed chi-square tests (χ^2) / t tests. A multivariate logistic regression model with the backward conditional method was used to identify predictors of depressive symptoms. An ROC curve was plotted to assess the possible role of HbA1c as a diagnostic predictive test of depression symptoms. **Results** A total of 42.8% (n = 161) individuals showed clinical depressive symptoms. When comparing individuals with and without depression symptoms, those with depression symptoms showed higher levels of glucose and HbA1c; additionally, gender ($p = 0.04$), age ($p = 0.006$), HbA1c ($p < 0.01$), and complications related to diabetes were predictive factors for clinical depressive symptoms ($p < 0.01$). However, HbA1c showed a low diagnostic accuracy for depressive symptoms, with an area under the ROC curve of 0.59. **Conclusions** Our fi ndings provided evidence of the sex, age, HbA1c levels, and medical complications as predictors of clinical depressive symptoms in individuals with diabetes mellitus. Nevertheless, HbA1c levels are not useful as a diagnostic instrument for depressive symptom severity in these Mexican individuals.
Palabras claves	Diabetes; HbA1c; ROC curve; Mexican population; Depression

Revista	**NORTH AMERICAN JOURNAL OF AQUACULTURE**
ISSN	1548-8454
DOI	https://doi.org/10.1002/naaq.10316
Título del Artículo	Evaluation of *in vitro* and *in vivo* digestibility of potential feed ingredients for juvenile Yellowtail Snapper

Autores e instituciones de adscripción	Alvaro Barreto [1]; Martín Arenas [2]; Alfonso Álvarez González [2]; Jaime Suárez Bautista [3]; Adolfo Sánchez [3]; Carlos Maldonado [3]; Gerard Cuzon [3]; Gabriela Gaxiola [3]; [1] Posgrado de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México, Coyoacán, Ciudad de México, Mexico [2] Laboratorio de Fisiología en Recursos Acuáticos, División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, Mexico [3] Unidad Multidisciplinaria de Docencia e Investigación de Sisal, Facultad Ciencias, Universidad Nacional Autónoma de México, Ciudad de México, Mexico
Resumen	**Objective:** The carnivorous Yellowtail Snapper *Ocyurus chrysurus* has the potential for production in aquaculture. However, there is a lack of studies investigating the digestibility of ingredients needed to formulate balanced diets for this species. **Methods:** The in vitro protein digestibility of fish meal (FM), poultry by-product meal (PBM), poultry meal (PM), protiblend, canola meal (CM), soybean meal, and wheat gluten was evaluated using the pH-stat technique. The in vivo digestibility was determined by formulating test diets with a 70:30 ratio of the reference diet and the test ingredients. **Result:** In terms of in vitro digestibility, FM, PBM, and PM exhibited the highest degree of hydrolysis (DH). Conversely, PBM displayed the lowest apparent digestibility coefficient of protein ($ADC_{protein}$) in the in vivo digestibility test. Meanwhile, FM, PM, and CM demonstrated higher values of protein digestibility. Beta regression between $ADC_{protein}$ and the DH and ash content of the ingredients resulted in a high correlation (R^2 =0.94). **Conclusion:** The results of the present study indicate that Yellowtail Snapper efficiently digested and absorbed FM, PM, and CM ingredients, which contain a lower content of ash
Palabras claves	Apparent digestibility; feed ingredients; fish meal; poultry by product meal; Yellowtail Snapper

Revista	**LATIN AMERICAN JOURNAL OF AQUATIC RESEARCH**
ISSN	0718-560X
DOI	https://doi.org/10.3856/vol52-issue1-fulltext-3037
Título del Artículo	Evaluation of protein and lipid ingredients through *in vitro* digestibility for tropical gar (*Atractosteus tropicus*) juveniles
Autores e instituciones de adscripción	Rocío Guerrero Zárate [1]; Miguel Ángel Olvera Novoa [2]; Ronald Jesús Contreras [1]; Carlos Alfonso Frías Quintana [3]; Rafael Martínez García [1]; Carlos Alfonso Álvarez González [1] [1] Laboratorio de Fisiología en Recursos Acuáticos, División Académica de Ciencias Biológicas Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México [2] Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional Unidad Mérida, Mérida, Yucatán, México [3] Instituto Tecnológico de Boca del Río, Boca del Río, Veracruz, México
Resumen	Tropical gar (*Atractosteus tropicus*) is an ecologically, culturally, economically, and scientifically important species. Therefore, it is essential to know the available resources to design feeds for the culture of this species. This study evaluated the *in vitro* digestibility of meals and oils commonly used in aquaculture, using crude extract of the stomach and intestines of *A. tropicus* juveniles. We used the pH stat titration system to determine the degree of hydrolysis (DH%), the concentration of amino acids released (mg g of $meal^{-1}$), and the speed of hydrolysis (SH%) of various animal and vegetable ingredients. The relative digestibility of each protein ingredient was calculated using bovine hemoglobin for acid digestion and Hammersten bovine casein for the alkaline phase as reference ingredients (100% digestibility). For lipid ingredients, fish oil was used as a reference. The highest relative digestibility for protein ingredients was observed with fish, crustaceans, beef, poultry meat and offal, and beef blood meals. The best lipid SH was observed with soybean lecithin and cod liver, soybean, olive, maize, and canola oils. It is possible to use a wide variety of terrestrial animal proteins and vegetable oils for manufacturing a diet for *A. tropicus* rearing.
Palabras claves	*Atractosteus tropicus*; tropical gar; pH-stat; proteases; lipases; in vitro digestibility

Revista	**ENERGIES**
ISSN	1996-1073
DOI	https://doi.org/10.3390/en17010092
Título del Artículo	Evaluation of Technical and Economic Indicators for the Production Process of Microalgae Lipids Considering CO_2 Capture of a Thermoelectric Plant and Use of Piggery Wastewater
Autores e instituciones de adscripción	Esveidi Montserrat Valdovinos García [1]; Christian Ariel Cabrera Capetillo [2]; Micael Gerardo Bravo Sánchez [3]; Juan Barajas Fernández [4]; María de los Ángeles Olán Acosta [4]; Moisés Abraham Petriz Prieto [1] [1] División Académica Multidisciplinaria de Jalpa de Méndez (DAMJM), Universidad Juárez Autónoma de Tabasco (UJAT), Carretera Estatal Libre Villahermosa-Comalcalco Km. 27+000 s/n Ranchería Ribera Alta, Jalpa de Méndez 86205, Mexico [2] Departamento de Posgrado, Doctorado en Ciencias de la Ingeniería, Tecnológico Nacional de México en Celaya, Apartado Postal 57, Celaya 38010, Mexico [3] Departamento de Ingeniería Bioquímica, Tecnológico Nacional de México en Celaya, Apartado Postal 57, Celaya 38010, Mexico [4] División Académica de Ingeniería y Arquitectura (DAIA), Universidad Juárez Autónoma de Tabasco (UJAT), Carretera Cunduacán-Jalpa de Méndez Km. 1 Col. La Esmeralda, Cunduacán 86690, Mexico
Resumen	Microalgae are highly studied microorganisms for the production of high-value products due to their high content of proteins, lipids, carbohydrates, and chlorophyll. These compounds are refined to obtain profitable industrial products. This article analyzes the lipid production of *Chlorella* sp. biomass, considering 18 scenarios for its production, with 9 of these being partially supplemented with swine wastewater. A 1 ha area was considered for biomass cultivation, primary and secondary biomass harvesting, and lipid extraction. Using simulation in the software SuperPro Designer v10, parameters such as CO_2 capture (from a thermoelectric power plant), freshwater consumption, wastewater consumption, energy consumption, and unit production cost were evaluated. The results show that the production cost is high, ranging from 836.9 US $/kg to 1131.5 US $/kg of produced lipids, with a maximum CO_2 capture of 454 kg of CO_2/kg of lipids. The use of wastewater reduces the production cost by approximately 10%. The evaluation of technical and economic parameters allows us to identify bottlenecks and implement strategies to reduce production costs.
Palabras claves	Techno economic; *Chlorella* sp; lipid; simulation; biorefinery

Revista	**AIMS ENERGY**
ISSN	eISSN: 1996-1073
DOI	https://doi.org/10.3934/energy.2024046
Título del Artículo	Evaluation of the bioenergy potential of agricultural and agroindustrial waste generated in southeastern Mexico
Autores e instituciones de adscripción	Nathaly A. Díaz Molina [1], José A. Sosa Olivier [1]; José R. Laines Canepa [1]; Rudy Solís Silván [2]; Donato A. Figueiras Jaramillo [3] [1] Pilot Plant 3 solid waste and atmospheric treatment, Academic Division of Biological Sciences, Juarez Autonomous University of Tabasco, Mexico [2] Comalcalco Higher Technological Institute, Comalcalco, Tabasco, Mexico [3] Coprocessing Laboratory, Geocycle® SA. of CV. Macuspana, Mexico
Resumen	The generation of large volumes of agricultural and agroindustrial waste in the state of Tabasco represents a significant waste management challenge. We aimed to determine the bioenergy potential of five types of biomasses: Banana rachis, coconut shell, cocoa pod husk, sugarcane bagasse, and palm kernel shell, generated in agricultural and agroindustrial processes. This research involved characterizing and evaluating the energy quality of these biomasses by determining their calorific values and assessing their viability as fuel alternative sources. Additionally, we explored these biomasses' calorific value potential to reduce the inadequate disposal of wastes, reduce environmental impact, and provide alternative uses for these materials, which are typically discarded or have limited added value in the southeast region. The yield of waste generation per amount of production was estimated, with cocoa pod husk biomass and sugarcane bagasse, banana rachis, coconut shell, and palm kernel shell generating 0.685, 0.283, 0.16, 0.135, and 0.0595 kg of biomass per kg of crop, respectively. The bioenergy potential was evaluated through direct measurements using a calorimeter bomb, and indirect measurements using stoichiometric calculations. Four stoichiometric methods based on predictive equations were employed to determine the energy content of the biomasses from their elemental composition (Dulong,

Resumen	Friedl, Channiwala, Boie). The biomasses with the highest calorific values were coconut shell and cocoa pod husk, with values of 16.47 ± 0.24 and 16.02 ± 1.54 MJ/kg, respectively. Moreover, banana rachis had the lowest calorific value at 13.68 ± 3.22 MJ/kg. The calorific values of the sugarcane bagasse and palm kernel shell were 13.91 ± 0.98 and 15.29 ± 1.02, respectively. The factorial experimental design and statistical analysis revealed trends and magnitudes in the evaluation of energy determination methods and types of waste. The predictive equation of Dulong showed the highest similarity to the experimental values, especially for coconut shell (16.02 ± 0.08 MJ/kg). The metal content in biomasses such as palm kernel shell and coconut shell were below the limits established in ISO 17225:2014. Finally, our results indicated that coconut shell has superior characteristics for potential use as an alternative fuel, whereas banana rachis requires exploring alternative utilization options.
Palabras claves	Biomass, calorific value, alternative fuels, waste management, elemental content

Revista	**BOLETÍN DE LA SOCIEDAD ESPAÑOLA DE CERÁMICA Y VIDRIO**
ISSN	2173-0431
DOI	https://doi.org/10.1016/j.bsecv.2023.06.003
Título del Artículo	Evaluation of the photocatalytic activity of ZnO nanorods and nanoflowers grown from seed layers deposited by spin coating
Autores e instituciones de adscripción	Antonia del Rocío López Guemez [1]; Adrián Cordero García [1]; José Luis Cervantes López [2]; Hermicenda Pérez Vidal [1]; Laura Lorena Díaz Flores [2] [1] División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, Mexico [2] División Académica de Ingeniería y Arquitectura, Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, Mexico
Resumen	The increase in pollution, using photocatalytic materials to degrade organic pollutants remains in force. ZnO is the most used semiconductors for photocatalytic applications. The oriented growth of nanostructures on substrates or seed layers (SL) improves the physical and chemical properties compared to the bulk-grown material. In this work, the photocatalytic efficiency of ZnO nanorods and nanoflowers was evaluated, obtained by hydrothermal growth (HG) over SL deposited by the spin-coating technique (SCT). The characterizations results showed two types of growth: 1D nanostructures with a dimension in the range of 400–1000 nm and diameters of 70–100 nm, and 1D microstructures with approximate 5–11 μm length and diameters of 1–2 μm. However, in the 7 SL system, micro prisms were generated, which led to the formation of 3D nanostructures (micro flowers) of ZnO with a maximum of 6 μm in diameter. The system with 1D and 3D ZnO nanostructures, grown in 7 SL, was the most efficient methylene blue degradation. Achieving 100% transformation in 120 min, with a rate constant of 2.98×10^{-2} min^{-1}. The results show that the SCT deposit combined with the sol–gel method and HG produces 1D and 3D structures with high potential in photocatalytic degradation.
Palabras claves	Zinc oxide; Sol gel; Hydrothermal growth; Nanostructures; Photocatalysis

Revista	**TROPICAL AND SUBTROPICAL AGROECOSYSTEMS**
ISSN	1870-0462
DOI	http://doi.org/10.56369/tsaes.5194
Título del Artículo	Evaluation of the reliability and concordance of visual weight assessment in water buffalo females
Autores e instituciones de adscripción	Jesús Ignacio Vázquez Bolaina [1]; Rosario Salazar Cuytun [1]; Alvar Alonzo Cruz Tamayo [2]; Roberto C. Barrientos Medina [3]; José Carlos Escobar España [4]; Ricardo A. García Herrera [1]; Alfonso Juventino Chay Canul [1] [1] Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias Agropecuarias, Carretera Villahermosa-Teapa, km 25, R/A. La Huasteca 2ª Sección, Centro, Tabasco, México. C.P. 86280. [2] Facultad de Ciencias Agropecuarias, Universidad Autónoma de Campeche, Escárcega, Campeche, México. C.P. 24350. [3] Facultad de Medicina Veterinaria y Zootecnia, Campus de Ciencias Biológicas y Agropecuarias, Universidad Autónoma de Yucatán, km 15.5 carretera Mérida-Xmatkuil, Mérida, Yucatán, México. C. P. 97135. [4] Facultad de Ciencias Agrícolas Campus IV, Universidad Autónoma de Chiapas, entronque Huehuetán, Chiapas, México. C.P. 30660

Resumen	**Background.** For the development of reproductive, nutritional and health programmes, estimation of animal body weight (BW) is a fundamental tool in herd management. **Objective.** To evaluate of the reliability and concordance of visual weight assessment in water buffalo females. **Methodology.** Data on visually estimated body weight (VM) and actual body weight (BW) were recorded for 229 female water buffaloes. BW was recorded using a digital scale and visual estimation BW was taken as the average of three observations made by three observers. The measurements obtained by each of the different estimation methods were also compared with the observed weights by inspecting the paired Bland-Altman plots prior to logarithmic transformation. **Results.** Correlations between observed BW and mean predicted BW for visual methods showed a positive and significant relationship (P<0.001), with an r value of 0.95. According to the intraclass correlation coefficient (ICC), there was a high degree of reliability in the visual estimates of buffalo weight, due to the similarity in the mean and dispersion of each observer's estimates. Both the Bland-Altman plot and the ICC show that there is a high level of concordance between the buffalo weights obtained by the visual and real methods. **Implications.** The result of the present study showed that visual assessment highlights the ability of livestock handlers to have a very accurate estimation of BW in female water buffaloes. **Conclusion.** The results of this study show that visual assessment highlights the ability of livestock handlers to visually estimate BW in female water buffaloes with high reliability and concordance with the animal weighbridge method.
Palabras claves	Water buffalo; Live weight; Animal production; Accuracy

Revista	**GENOME BIOLOGY AND EVOLUTION**
ISSN	1759-6653
DOI	https://doi.org/10.1093/gbe/evae087
Título del Artículo	Evolutionary Rate Shifts in Coding and Regulatory Regions Underpin Repeated Adaptation to Sulfidic Streams in Poeciliid Fishes
Autores e instituciones de adscripción	Rishi De Kayne [1]; Blair W. Perry [2]; Kerry L. McGowan [2]; Jake Landers [2]; Lenin Arias Rodríguez [3]; Ryan Greenway [4]; Carlos M. Rodríguez Peña [5]; Michael Tobler [6,7,8]; Joanna L. Kelley [1] [1] Department of Ecology and Evolutionary Biology, University of California Santa Cruz, Santa Cruz, CA 95060, USA [2] School of Biological Sciences, Washington State University, Pullman, WA 99164, USA [3] División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco (UJAT), Villahermosa, México [4] Division of Biology, Kansas State University, Manhattan, KS 66506, USA [5] Instituto de Investigaciones Botánicas y Zoológicas, Universidad Autónoma de Santo Domingo, Santo Domingo 10105, Dominican Republic [6] Department of Biology, University of Missouri–St. Louis, St. Louis, MO 63131, USA [7] Whitney R. Harris World Ecology Center, University of Missouri–St. Louis, St. Louis, MO 63121, USA [8] WildCare Institute, Saint Louis Zoo, St. Louis, MO 63110, USA
Resumen	Adaptation to extreme environments often involves the evolution of dramatic physiological changes. To better understand how organisms evolve these complex phenotypic changes, the repeatability and predictability of evolution, and possible constraints on adapting to an extreme environment, it is important to understand how adaptive variation has evolved. Poeciliid fishes represent a particularly fruitful study system for investigations of adaptation to extreme environments due to their repeated colonization of toxic hydrogen sulfide–rich springs across multiple species within the clade. Previous investigations have highlighted changes in the physiology and gene expression in specific species that are thought to facilitate adaptation to hydrogen sulfide–rich springs. However, the presence of adaptive nucleotide variation in coding and regulatory regions and the degree to which convergent evolution has shaped the genomic regions underpinning sulfide tolerance across taxa are unknown. By sampling across seven independent lineages in which nonsulfidic lineages have colonized and adapted to sulfide springs, we reveal signatures of shared evolutionary rate shifts across the genome. We found evidence of genes, promoters, and putative enhancer regions associated with both increased and decreased convergent evolutionary rate shifts in hydrogen sulfide–adapted lineages. Our analysis highlights convergent evolutionary rate shifts in sulfidic lineages associated with the modulation of endogenous hydrogen sulfide production and hydrogen sulfide detoxification. We also found that regions with shifted evolutionary rates in sulfide spring fishes more often exhibited convergent shifts in either the coding region or the regulatory sequence of a given gene, rather than both.

Palabras claves	Adaptation, convergent evolution, hydrogen sulfide, Poeciliidae, extremophile.

Revista	**VETERINARY PARASITOLOGY**
ISSN	1873-2550
DOI	https://doi.org/10.1016/j.vetpar.2024.110328
Título del Artículo	First documentation of dose response of *Amblyomma cf. parvum* population infesting dogs to amitraz, coumaphos, and cypermethrin
Autores e instituciones de adscripción	Roger I. Rodríguez Vivas [1]; Melina M. Ojeda Chi [2]; Iris Trinidad Martínez [1]; Gabriela J. Flota Burgos [1]; Nadia F. Ojeda Robertos [3] [1] Facultad de Medicina Veterinaria y Zootecnia, Campus de Ciencias Biológicas y Agropecuarias, Universidad Autónoma de Yucatán, km. 15.5 Carretera Mérida–Xmatkuil, Mérida, Yucatán CP. 97000, Mexico [2] Facultad de Ciencias Biológicas y Agropecuarias región Tuxpan. Universidad Veracruzana, Tuxpan de Rodríguez Cano, Veracruz, Mexico [3] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Carr. Villahermosa-Teapa, km 25, Villahermosa, Tabasco CP 86280, Mexico
Resumen	*Amblyomma cf. parvum* (Ixodida: Ixodidae) is an ectoparasite of domestic animals and wildlife on the American continent. There is little information on the efficacy of acaricides for the control of this tick species in domestic animals. Here, we determined the toxicological response of *A. cf. parvum* to amitraz, coumaphos, and cypermethrin. Engorged females of *A. cf. parvum* were collected (in two periods, eight months apart) from dogs in Yucatan, Mexico. The larval immersion test was used on the progeny of adult female ticks to test for amitraz susceptibility, and the larval package test was used to test for coumaphos and cypermethrin susceptibility. Dose–mortality regressions, lethal concentrations (LC), 95 % confidence intervals (CI95 %), and slopes were estimated by probit analysis. The lethal concentrations to kill 50 % of the tick population for amitraz, coumaphos, and cypermethrin in the first period were 1 ppm (CI95 %: 1–3 ppm), 10 ppm (CI95 %: 9–11 ppm), and 10 ppm (CI95 %: 9–10 ppm), respectively; meanwhile in the second period were 2 ppm (CI95 %: 1–3 ppm), 8 ppm (CI95 %: 6–10 ppm), and 9 ppm (CI95 %: 8–10 ppm), respectively. In conclusion, amitraz, coumaphos, and cypermethrin demonstrated high larvicidal efficacy in *in vitro* bioassays against *A. cf. parvum* populations infesting dogs.
Palabras claves	Acaricide; Bioassay; Dose–mortality regression; Susceptibility

Revista	**WESTERN NORTH AMERICAN NATURALIST**
ISSN	1527-0904
DOI	https://doi.org/10.3398/064.084.0207
Título del Artículo	First record of coyote *Canis latrans* in an urban area of southeastern Mexico: The case of Villahermosa, Tabasco, Mexico
Autores e instituciones de adscripción	Elías J. Gordillo Chávez [1,2,]; Claudia Villanueva García [2]; Mircea G. Hidalgo-Mihart [2] [1] Departamento de Biología Animal (Zoología), Facultad de Biología, Universidad de Salamanca, 37007 Salamanca, Spain [2] Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias Biológicas. 86150 Villahermosa, Tabasco, Mexico
Resumen	The coyote (*Canis latrans*) is a generalist species capable of inhabiting urban environments. Although its presence is common in some cities in the United States, it has yet to be recorded in Mexican cities. This report presents the first sighting of a coyote in Villahermosa, Tabasco, obtained from sightings and photographs of a female recorded on several occasions in April and May of 2023 at a site located 2.3 km inside the city. The coyote's origin prior to inhabiting the urban area of Villahermosa is still being determined. Still, its presence in the area for 10 months indicates that conditions are suitable for some coyote individuals to live in urban areas of Mexico. Coyotes in urban areas could trigger conflicts with residents, as they may be perceived as threats to human and pet safety. Furthermore, interactions with dogs in urban areas could facilitate the spread of diseases to the wild environment where coyotes may be moving
Palabras claves	Cities & Towns; Infectious Disease Transmission; Dogs; Species; Coyote; Photographs

Revista	**NANOTOXICOLOGY**
ISSN	0270-7306
DOI	https://doi.org/10.1080/17435390.2024.2323069
Título del Artículo	Food-grade titanium dioxide E171 and zinc oxide nanoparticles induce mitochondrial permeability and cardiac damage after oral exposure in rats
Autores e instituciones de adscripción	Francisco Correa Segura [1]; Fernanda Isabel Macías Macías [2]; Kimberly Abigaíl Velázquez Delgado [2]; María Del Pilar Ramos Godínez [3]; Angélica Ruiz Ramírez [1]; Pedro Flores [4]; Elizabeth Huerta García [5]; Rebeca López Marure [2] [1] Departamento de Biomedicina Cardiovascular, Instituto Nacional de Cardiología Ignacio Chávez, Ciudad de México, México. [2] Departamento de Fisiología, Instituto Nacional de Cardiología Ignacio Chávez, Ciudad de México, México. [3] Departamento de Microscopía Electrónica, Instituto Nacional de Cancerología, Ciudad de México, México. [4] Departamento de Instrumentación, Instituto Nacional de Cardiología Ignacio Chávez, Ciudad de México, México. [5] División Académica Multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, Villahermosa, México.
Resumen	Food-grade titanium dioxide (E171) and zinc oxide nanoparticles (ZnO NPs) are found in diverse products for human use. E171 is used as whitening agent in food and cosmetics, and ZnO NPs in food packaging. Their potential multi-organ toxicity has raised concerns on their safety. Since mitochondrial dysfunction is a key aspect of cardio-pathologies, here, we evaluate the effect of chronic exposure to E171 and ZnO NPs in rats on cardiac mitochondria. Changes in cardiac electrophysiology and body weight were measured. E171 reduced body weight more than 10% after 5 weeks. Both E171 and ZnO NPs increased systolic blood pressure (SBP) from 110-120 to 120-140 mmHg after 45 days of treatment. Both NPs altered the mitochondrial permeability transition pore (mPTP), reducing calcium requirement for permeability by 60% and 93% in E171- and ZnO NPs-exposed rats, respectively. Treatments also affected conformational state of adenine nucleotide translocase (ANT). E171 reduced the binding of EMA to Cys 159 in 30% and ZnO NPs in 57%. Mitochondrial aconitase activity was reduced by roughly 50% with both NPs, indicating oxidative stress. Transmission electron microscopy (TEM) revealed changes in mitochondrial morphology including sarcomere discontinuity, edema, and hypertrophy in rats exposed to both NPs. In conclusion, chronic oral exposure to NPs induces functional and morphological damage in cardiac mitochondria, with ZnO NPs being more toxic than E171, possibly due to their dissociation in free Zn^{2+} ion form. Therefore, chronic intake of these food additives could increase risk of cardiovascular disease.
Palabras claves	E171; cardiac damage; mitochondrial dysfunction; titanium dioxide nanoparticles; zinc oxide nanoparticles.

Revista	**SCIENCE OF THE TOTAL ENVIRONMENT**
ISSN	1879-1026
DOI	https://doi.org/10.1016/j.scitotenv.2023.167563
Título del Artículo	Fungal community dynamics on limestone at the Chichén Itzá archaeological site in Mexico driven by protective treatments
Autores e instituciones de adscripción	Susana De la Rosa García [1]; Aránzazu Sierra Fernández [2]; Claudia García Solís [3]; Neftalí Soberanes García [4]; Patricia Quintana [5]; Sergio Gómez Cornelio [4,6]; Rafael Fort [2] [1] Laboratorio de Microbiología Aplicada, Division Academica de Ciencias Biologicas, Universidad Juarez ´ Autonoma de Tabasco, 0.5 km Carretera VillahermosaCardenas, ´ Villahermosa 86000, Tabasco, Mexico. [2] Instituteo de Geociencias (CSIC, UCM), Severo Ochoa 7, CP 28040 Madrid, Spain [3] Seccion de Conservacion y Restauracion, Centro INAH-Yucatan, ´ Calle 10 No. 310-A, Col. Gonzalo Guerrero, 97310 Merida, Yucatan, ´ Mexico [4] Universidad Politecnica del Centro, Km. 22.5 Carretera Federal Villahermosa Teapa, Tumbulushal, Centro, 86290 Villahermosa, Tabasco, Mexico. [5] Laboratorio Nacional de Nano y Biomateriales, Departamento de Física Aplicada, CINVESTAV-IPN, A.P. 73, Ciordemex, 973109 Merida, Yucatan, ´ Mexico. [6] Laboratorio de Nanotecnología-CICTAT, Division Academica de Ingeniería y Arquitectura, Universidad Juarez ´ Autonoma de Tabasco, Carr. Cunduacan Jalpa ´ de Mendez, Km 1, Cunduacan, ´ Tabasco 86690, Mexico
Resumen	Microorganisms naturally colonize rock-based materials in outdoor environments, thereby contributing to their degradation. Fungi, especially in tropical environments with abundant water and favorable temperatures, play a significant role in biodegradation. However, many

Resumen	aspects of the microorganism-stone interaction, including fungal colonization dynamics and the impact of treatment applications, remain unclear. This study conducted a four-year in-situ evaluation of fungal community dynamics on limestone surfaces in the Temple of the Warriors at the Chichén Itzá archaeological site in Mexico, focusing on cleaning and treatment using nanoparticles (NPs). These NPs included zinc oxide (ZnO) and $CaZn_2(OH)_6 \cdot 2H_2O$ (CZ)-based NPs synthesized via sol-gel (CZ-SG) and mechanochemical methods (CZ-MC), as well as CZ/$Ca(OH)_2$-based products (CZ:Ca-SG). The microbial colonization cover was assessed using colorimetric measurements, and the surface was sampled for fungal community isolation and identification. The results demonstrated significant impacts of cleaning and nanomaterial applications on cultivable fungal communities (melanized filamentous, hyaline, and microcolonial fungi), altering composition, dynamics, and stone surface coloration. In particular, ZnO NPs caused 50 % decline in fungal species and individuals, whereas CZ:Ca-SG NPs displaced most species, indicating effective inhibition of the cultivable fungal community. Microcolonial fungi (MCF), known for their tolerance to withstand harsh environmental conditions, were the only fungal group found in the CZ:Ca-SG treatment. In contrast, CZ-SG and CZ-MC increased the abundance of melanized species, resulting in darkening and reduced color intensity. This study highlights the importance of microcolonial fungi that are tolerant to cleaning and coating procedures in the preservation of stone cultural heritage. These findings enhance our understanding of fungal colonization dynamics following treatment and provide valuable insights into the challenges associated with preserving stone materials in tropical environments.
Palabras claves	Tropical environment; Biodeterioration; Limestone bioreceptivity; Calcium zinc hydroxide dihydrate Nanoparticles; ZnO nanoparticles Microcolonial fungi

Revista	**INTERNATIONAL JOURNAL OF GYNECOLOGY AND OBSTETRICS**
ISSN	0020-7292
DOI	https://doi.org/10.1002/ijgo.15302
Título del Artículo	Gene expression of cardiovascular risk markers in mononuclear cells of pregnant woman in relation to plasma leptin and homocysteine levels: A cross-sectional study
Autores e instituciones de adscripción	Eduardo Martínez Abundis [1]; Fernanda Hernández Landero [1]; Grecia Escobar Calderón [1]; Nancy Gómez Crisóstomo [1]; Adriana Contreras Paredes [2]; Erick de la Cruz Hernández [1]
Autores e instituciones de adscripción	[1]Laboratorio de investigacion en Enfermedades Metabolicas e Infecciosas, Division Academica Multidisciplinaria de Comalcalco, Universidad Juarez Autonoma de Tabasco, Comalcalco, Tabasco, Mexico. [2]Unidad de Investigacion Biomedica en Cancer, Instituto Nacional de Cancerología-Universidad Nacional Autonoma de Mexico, Ciudad de Mexico, Mexico.
Resumen	**Objective:** To investigate the relationship between anthropometric, biochemical, and hematologic parameters and serum leptin and homocysteine (Hcy) levels. Also, to determine the effect of leptin and Hcy on expression of genes associated with cardiovascular disease susceptibility (APOA1, LRP1, COX-1, and COX-2) in mononuclear cells of healthy pregnant women. **Methods:** Between August 2018 and January 2020, a cross-sectional study was conducted on 161 healthy pregnant women in Tabasco, southeastern Mexico. The study population was classified by trimester, according to gestational pregnancy. Anthropometric, biochemical (leptin and homocysteine), and hematologic data were obtained under fasting conditions. APOA1, LRP1, COX-1, and COX-2 expression in mononuclear cells was evaluated using RT-qPCR. **Results:** Red cell indices (hemoglobin, hematocrit, and erythrocytes) were negatively and positively correlated with leptin and Hcy levels, respectively, in the first- and second-trimester groups. Increased leptin levels and low red cell indices were significantly associated with BMI <25.0 in the second-trimester group; however, no significant differences were observed in Hcy levels. Increased leptin and Hcy levels were significantly associated with high lipid indicators in the first- and third-trimester groups, respectively. High APOA1 and COX-2 expression was significantly associated with reduced leptin and increased Hcy levels in the second- and third-trimester groups. **Conclusion:** Increased leptin and Hcy levels during pregnancy, mainly associated with modifications in erythrocytes and lipid indices, may lead to early modification of genes related to lipid metabolism (APOA1) and proinflammatory response (COX-2) and, thereby, increase cardiovascular disease risk.
Palabras claves	Cardiovascular risk; homocysteine; leptin; lipid metabolism; pregnancy.

Revista	**BIOAGRO**
ISSN	2521-9693
DOI	https://doi.org/10.51372/bioagro361.3
Título del Artículo	Genetic differences and population structure of *Capsicum spp.* populations with simple sequences repets markers ssrs
Autores e instituciones de adscripción	Yasmín Araceli Gálvez Muñoz [1]; María Esther Cea Migenes [2]; Régulo Ruíz Salazar [3]; Guillermo Castañón Nájera [1]; Luis Latournerie Moreno [4]; Moisés Ramírez Meraz [5] [1] División Académica de Ciencias Biológicas. Universidad Juárez Autónoma de Tabasco. Villahermosa, Tabasco, México. [2] Universidad Agraria de La Habana "Fructuoso Rodríguez Pérez". San José de Las Lajas, Mayabeque, Cuba. [3] Unidad Académica Multidisciplinaria Reynosa Aztlán, Universidad Autónoma de Tamaulipas. Reynosa, Tamaulipas, México. [4] Instituto Tecnológico de México. Conkal, Yucatán, México. [5] Campo Experimental Las Huastecas, Instituto Nacional de Investigaciones Forestales Agrícolas y Pecuarias. Tampico, Tamaulipas.
Resumen	Genetic differences and population structure of *Capsicum spp.* populations with simple sequences repeat markers (ssrs) In the Solanaceae family, *Capsicum spp.* is a worldwide important vegetable genus, and widely cultivated in Mexico. The objective of this research was to know the genetic relation, genetic diversity, and genetic structure of fourteen populations of *Capsicum spp.* (six from Tabasco, five from Tamaulipas, Mexico, and three from Cuba). The four oligonucleotides identified 202 alleles, 38 of them were polymorphics. The majority of alleles (65) were amplified by oligo HpmsCaSIG19, and Hpms1-274 detected a small amount of alleles (35); the average of alleles was 50,5. The genetic structure of the population was estimated with the F fixation indices. The value of the diversity between regions (Phi_{RT}) was 0,264, this means that the populations presented 73,6% of variation between them. High diversity was found among subpopulations and inside regions (Phi_{PR}=0,412). The PhiPT (analog of F_{ST})=0,567, can be interpreted as high differentiation in the genics frequency of the populations that were evaluated. The cluster analysis classified the fourteen populations at a distance of 11 in five groups; the clusters I and III were formed by four populations on each one, while, two populations per cluster were observed in the clusters II, IV, and V. In this analysis, the population Cachucha of Cuba was not related with the backcrosses Habanero x Amashito (RCHaAm) and Garbanzo x Habanero (RCGaHa), and it was not related to the Habanero population of Tabasco Mexico.
Palabras claves	*Capsicum spp.*, chili populations, genetic diversity, phylogenetic relations, SSR markers

Revista	**BIOLOGICAL JOURNAL OF THE LINNEAN SOCIETY**
ISSN	1095-8312
DOI	https://doi.org/10.1093/biolinnean/blae040
Título del Artículo	Genital evolution in the dark: characterization of male and female genitalia in cave mollies and their surface ancestors (*Poecilia mexicana*, *Poeciliidae*)
Autores e instituciones de adscripción	Erik S. Johnson [1,2]; Soren D. Johnson [1,2]; Rachel McNemee [3,4]; Ryan Greenway [3]; Lenin Arias Rodríguez [5]; Michael Tobler [1,2,6] [1] Department of Biology, University of Missouri—St. Louis, St. Louis, MO 63121, USA. [2] Whitney R. Harris World Ecology Center, University of Missouri—St. Louis, St. Louis, MO 63121, USA. [3] Division of Biology, Kansas State University, Manhatan, KS 66506, USA. [4] Topeka Zoo and Conservation Center, Topeka, KS 66606, USA. [5] División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Villahermosa 86039, Tabasco, México. [6] WildCare Institute, Saint Louis Zoo, St. Louis, MO 63110, USA
Resumen	Animal genitalia evolve rapidly because of coevolution between male and female traits. However, how the ecological context in which mating occurs might modulate the evolution of genital traits remains poorly understood. We investigated how a change in the sensory environment (the absence of light upon cave colonization) impacted the expression of genital traits in a live-bearing fsh, *Poecilia mexicana* (Poeciliidae), with populations in adjacent cave and surface habitats. Quantifying characteristics of the female urogenital aperture and the male gonopodium (a modifed anal fn used for copulation), we found signifcant

Resumen	diferences in genital traits of both sexes. Females from cave populations exhibited larger and more rounded genitalia. Males from cave populations exhibited a signifcantly enlarged palp, a feshy gonopodial appendage that has been hypothesized to have sensory functions. Our results suggest that genital traits can diverge rapidly among closely related populations exposed to diferent environmental conditions. The absence of light could impact genital evolution directly, if some genital structures have sensory functions that compensate for the lack of visual information during copulation, or indirectly, if the absence of light impacts dynamics of sexual conflict or cryptic female choice that arise through the interaction between the sexes.
Palabras claves	Adaptation; cave fsh; gonopodium; internal fertilization; sensory environment; sexual selection

Revista	**GENERAL RELATIVITY AND GRAVITATION**
ISSN	1572-9532
DOI	https://doi.org/10.1007/s10714-024-03249-1
Título del Artículo	Hamiltonian analysis and Faddeev–Jackiw formalism for two-dimensional quadratic gravity expressed as BF theory
Autores e instituciones de adscripción	Jaime Manuel Cabrera [1]; Jorge Mauricio Paulin Fuentes [1] [1] División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Km 1 Carretera Cunduacán-Jalpa, 86690, Cunduacán, Tabasco, Mexico
Resumen	We examine the model of two-dimensional quadratic gravity as a consequence of symmetry breaking within the framework of background field (BF) theory. This theory is essentially an extension of BF theory, introducing an additional polynomial term that operates on both the gauge and background fields. We analyze the theory using the Dirac and Faddeev–Jackiw procedures, determining the form of the gauge transformation, the full structure of the constraints, the counting of degrees of freedom, and the generalized Faddeev–Jackiw brackets. Additionally, we demonstrate the coincidence of the Faddeev–Jackiw and Dirac's brackets. Finally, we provide some remarks and discuss prospects.
Palabras claves	Hamilton dynamics; Faddeev–Jackiw formalism; Quadratic gravity; BF theory

Revista	**FISH PHYSIOLOGY AND BIOCHEMISTRY**
ISSN	1573-5168
DOI	https://doi.org/10.1007/s10695-024-01396-5
Título del Artículo	Histological study of the development of the digestive system during larval feeding in the pike silverside *Chirostoma estor*
Autores e instituciones de adscripción	Ana Rosa Hernández Téllez [1]; Gustavo Alejandro Rodríguez Montes de Oca [1,2]; José Cristóbal Román Reyes [1,2]; Juan Antonio Tello Ballinas [3]; Mario Alberto Galaviz Espinoza [4]; Carlos Alfonso Álvarez González [5] [1] Posgrado en Ciencias en Recursos Acuáticos, Facultad de Ciencias del Mar, Universidad Autónoma de Sinaloa, Paseo Claussen S/N. Col. Los Pinos, C.P. 82000, Mazatlán, Sinaloa, Mexico. [2] Laboratorio de Reproducción y Cultivo de Peces, Facultad de Ciencias del Mar, Universidad Autónoma de Sinaloa. Paseo Claussen S/N. Col. Los Pinos, C.P. 82000, Mazatlán, Sinaloa, Mexico. [3] Instituto Mexicano de Investigación en Pesca y Acuacultura Sustentables, Centro Regional de Investigación Acuícola Pesquera-Pátzcuaro, Calz. Ibarra No. 28, Col. Ibarra, C.P. 61609, Pátzcuaro, Michoacán, Mexico. [4] Facultad de Ciencias Marinas, Universidad Autónoma de Baja California (UABC), Ensenada, Mexico. [5] Laboratorio de Fisiología en Recursos Acuáticos (LAFIRA), División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Carretera Villahermosa- Cárdenas Km. 0.5 S/N, entronque a Bosques de Saloya, C.P. 86150, Villahermosa, Tabasco, Mexico.
Resumen	*Chirostoma estor* (Jordan, 1879) is an endemic freshwater species with a high potential for aquaculture; however, as in many other fish, larviculture of this species is the most critical stage, in which the higher mortality rates. Therefore, it is necessary to fully describe the development of the digestive system to establish better feeding protocols in the larval culture of *C. estor*, both for aquaculture and restoration purposes. In the present study, larviculture was carried out from hatching to 20 days after hatching (DAH). The organisms

Resumen	were fed with the rotifer *Brachionus plicatilis* from 2 to 14 DAH, and nauplii of *Artemia* sp. from 15 to 20 DAH. A total of 12 organisms (0, 3, 5, 10, 15, and 20 DAH) were taken for size and weight growth and histological and histochemical analysis. The histological analysis indicated that after 3 DAH, the opening of the mouth and anus was observed, coinciding with the beginning of exogenous feeding. In addition, the digestive system developed, with differentiation of the oropharyngeal sections, esophagus, and intestine, folding of the intestinal mucosa, as well as associated organs (liver and pancreas) that reach their maximum development at 20 DAH. Thus, *C. estor* at this stage of development can digest and absorb nutrients despite being an agastric fish. The results obtained in this study will facilitate a better understanding of the ontogenetic morphophysiological development processes, associated with the transition of larvae to exogenous feeding, which ensures a higher percentage of survival during larval development and of course, adds to the diversity ontogenetics of teleostean.
Palabras claves	Atherinopsidae; Larvae; Morphophysiology; Ontogeny.

Revista	**MOLECULES**
ISSN	eISSN: 1420-3049
DOI	https://doi.org/10.3390/molecules29092003
Título del Artículo	HPLC-Based Metabolomic Analysis and Characterization of *Amaranthus cruentus* Leaf and Inflorescence Extracts for Their Antidiabetic and Antihypertensive Potential
Autores e instituciones de adscripción	Jesús Alfredo Araujo León [1]; Ivonne Sánchez del Pino [2]; Rolffy Ortiz Andrade [3]; Sergio Hidalgo Figueroa [4]; Areli Carrera Lanestosa [5]; Ligia Guadalupe Brito Argáez [1]; Avel González Sánchez [6]; Germán Giácoman Vallejos [6]; Oswaldo Hernández Abreu [7]; Sergio R. Peraza Sánchez [8]; Andrés Xingú López [8]; Víctor Aguilar Hernández [1] [1] Unidad de Biología Integrativa, Centro de Investigación Científica de Yucatán (CICY), Mérida 97205, Yucatán, Mexico [2] Unidad de Recursos Naturales, Centro de Investigación Científica de Yucatán (CICY), Mérida 97205, Yucatán, Mexico [3] Facultad de Química, Universidad Autónoma de Yucatán (UADY), Mérida 97069, Yucatán, Mexico [4] CONAHCyT-División de Biología Molecular, Instituto Potosino de Investigación Científica y Tecnológica A.C., San Luis Potosí 78216, San Luis Potosí, Mexico [5] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco (UJAT), Villahermosa 86280, Tabasco, Mexico [6] Facultad de Ingeniería, Universidad Autónoma de Yucatán (UADY), Mérida 97203, Yucatán, Mexico [7] Centro de Investigación de Ciencia y Tecnología Aplicada de Tabasco, Universidad Juárez Autónoma de Tabasco (UJAT), Cunduacán 86690, Tabasco, Mexico [8] Unidad de Biotecnología, Centro de Investigación Científica de Yucatán (CICY), Mérida 97205, Yucatán, Mexico
Resumen	The aim of this study was to investigate the potential of *Amaranthus cruentus* flavonoids (quercetin, kaempferol, catechin, hesperetin, naringenin, hesperidin, and naringin), cinnamic acid derivatives (*p*-coumaric acid, ferulic acid, and caffeic acid), and benzoic acids (vanillic acid and 4-hydroxybenzoic acid) as antioxidants, antidiabetic, and antihypertensive agents. An analytical method for simultaneous quantification of flavonoids, cinnamic acid derivatives, and benzoic acids for metabolomic analysis of leaves and inflorescences from *A. cruentus* was developed with HPLC-UV-DAD. Evaluation of linearity, limit of detection, limit of quantitation, precision, and recovery was used to validate the analytical method developed. Maximum total flavonoids contents (5.2 mg/g of lyophilized material) and cinnamic acid derivatives contents (0.6 mg/g of lyophilized material) were found in leaves. Using UV-Vis spectrophotometry, the maximum total betacyanin contents (74.4 mg/g of lyophilized material) and betaxanthin contents (31 mg/g of lyophilized material) were found in inflorescences. The leaf extract showed the highest activity in removing DPPH radicals. *In vitro* antidiabetic activity of extracts was performed with pancreatic α-glucosidase and intestinal α-amylase, and compared to acarbose. Both extracts exhibited a reduction in enzyme activity from 57 to 74%. Furthermore, the *in vivo* tests on normoglycemic murine models showed improved glucose homeostasis after sucrose load, which was significantly different from the control. *In vitro* antihypertensive activity of extracts was performed with angiotensin-converting enzyme and contrasted to captopril; both extracts exhibited a reduction of enzyme activity from 53 to 58%. The leaf extract induced a 45% relaxation in an ex vivo aorta model. In the molecular docking analysis, isoamaranthin and isogomphrenin-I showed predictive binding affinity for α-glucosidases (human maltase-glucoamylase and human sucrase-isomaltase), while catechin displayed binding affinity for human angiotensin-converting enzyme. The data from this study highlights the potential of *A. cruentus* as a functional food

Palabras claves	Betalains; HPLC-UV-DAD; flavonoids; antioxidants; diabetes and hypertension management

Revista	**BIOMASS CONVERSION AND BIOREFINERY**
ISSN	2190-6823
DOI	https://doi.org/10.1007/s13399-022-02314-6
Título del Artículo	Hydrothermal carbonization of cocoa shell: hydrochar characterization, kinetic triplets, and thermodynamic aspects of the process
Autores e instituciones de adscripción	Diakaridia Sangaré [1,2]; Stéphane Bostyn [1]; Mario Moscosa Santillán [3]; Verónica Belandria [1]; Pedro García Alamilla [4]; Marco Martin González Chávez [5]; Iskender Gökalp [6] [1] ICARE - Institut de Combustion, Aérothermique, Réactivité et Environnement [2] UASLP - Autonomous University of San Luis Potosí [3] UASLP - Universidad Autonoma de San Luis Potosi [México] [4] Universidad Juárez Autónoma de Tabasco - UJAT (MEXICO) [5] UASLP - Facultad de Ingeniería [6] METU - Middle East Technical University [Ankara]
Resumen	This study proposed the use of the kinetic triplet analysis and thermodynamic parameter determination to investigate the hydrothermal carbonization (HTC) of cocoa shell (CS) for energy production. The variations in the Eα were determined by model-free isoconversional methods, the A values were determined using the ASTM E698-18 kinetics approach, and for f(α), the master plot methods were used. A progressive variation of Eα values was found, revealing competitive or consecutive reactions during HTC process, as well as multiphasic biomass conversion. From the master plot method, the experimental curve of CS does not perfectly match a single theoretical curve, indicating different reaction mechanisms during the HTC process. However, over the entire conversion range, the *n*-order reaction model ($n=1.25$) adequately describes the experimental behavior ($R^2>0.995$). Furthermore, this value of $n=1.25$ may imply a relatively low collision probability and can be related to the high extractives and lignin content in CS. Furthermore, for specific values of α, the difference between $E\alpha$ and ΔH was lower than 3.98 kJ/mol indicating the facility to convert CS to hydrochar. In addition, the ΔS values showed that the process reaches thermodynamic stability during the conversion of CS. Finally, hydrochar characterization showed an energy densification of 40.30% in the case of hydrochar produced at 250 °C, thus demonstrating the feasibility of using this type of biomass for energy purposes.
Palabras claves	Cocoa shell; Hydrothermal carbonization; Reaction model; Kinetic triplets; Model-free methods; Thermodynamics parameters

Revista	**INTELLIGENT MEDICINE**
ISSN	2667-1026
DOI	https://doi.org/10.1016/j.imed.2023.02.001
Título del Artículo	Impact of data balancing a multiclass dataset before the creation of association rules to study bacterial vaginosis
Autores e instituciones de adscripción	Freddy de la Cruz Ruiz [1]; Juana Canul Reich [1]; Rafael Rivera López [2]; Erick de la Cruz Hernández [3] [1] Academic Division of Science and Technology of the Information, Juárez Autonomous University of Tabasco, La Esmeralda District, Tabasco, Mexico [2] Department of Systems, National Technological Institute of Mexico, Technological Institute of Veracruz, Veracruz, Mexico [3] Multidisciplinary Academic Division of Comalcalco, Juárez Autonomous University of Tabasco, Tabasco, Mexico
Resumen	**Background** Bacterial vaginosis is a polymicrobial syndrome in which the homeostasis exerted by the *Latobacillus* species that protect the vaginal mucosa has been lost. This study explored the data balancing process with the intention of improving the quality of association rules. The article aimed to balance the unbalanced multiclass dataset to improve association rule creation. **Methods** A dataset with 201 observations and 58 variables was

Resumen	analyzed. A preconstructed dataset was used. The authors collected the data between August 2016 and October 2018 in Tabasco, Mexico. The study population comprised sexually active women ages 18 to 50 who underwent gynecological inspection at the infectious and metabolic diseases research laboratory at the Universidad Juarez Autonoma de Tabasco. To determine the best k-value, the random-forest algorithm was used and the balancing was performed with the synthetic minority over-sampling technique (SMOTE), random over-sampling examples (ROSE), and adaptive syntetic sampling approach for imbalanced learning (ADASYN) algorithms. The Apriori algorithm created the rules and to select rules with statistical significance, the *is.redundant()*, *is.significant()*, and *is.maximal()* functions and quality metric Fisher's exact tes were used. The biological validation was carried out by the expert (bacteriologist). **Results** The ADASYN algorithm at *K*=9 the out of the bag (OOB) error was zero, this was the best *K*-values. In the balancing process the ADASYN algorithm show best the performance. From the dataset balanced with ADASYN, the apriori algorithm created the association rules and the selection with the quality metric Fisher's exact test, and the biological validation reported 13 rules. Gram - bacteria *Atopobium vaginae*, *Gardnerella vaginalis*, *Megasphaera filotipo 1*, *Mycoplasma hominis* and *Ureaplasma parvum* were detected by the apriori algorithm from the balanced dataset. **Conclusion** Balancing may improve the creation of association rules to efficiently model the bacteria that cause bacterial vaginosis.
Palabras claves	Bacterial vaginosis; Data balancing; Random Forest; Synthetic minority; over-sampling technique

Revista	**TROPICAL ANIMAL HEALTH AND PRODUCTION**
ISSN	1573-7438
DOI	https://doi.org/10.1007/s11250-024-03989-x
Título del Artículo	Impact of diversified grazing systems on milk production, nutrient use and enteric methane emissions in dual-purpose cows
Autores e instituciones de adscripción	Dixan Pozo Leyva [1]; Fernando Casanova Lugo [2]; Felipe López González [3]; María D Celis Álvarez [3]; Alvar A Cruz Tamayo [4]; Jorge R Canul Solís [5]; Alfonso J Chay Canul [6] [1] Tecnológico Nacional de México Campus I. T. de la Zona Maya, Carretera Chetumal-Escárcega km 21.5, Ejido Juan Sarabia, C.P. 77960. Othón P. Blanco, Quintana Roo, México. [2] Tecnológico Nacional de México Campus I. T. de la Zona Maya, Carretera Chetumal-Escárcega km 21.5, Ejido Juan Sarabia, C.P. 77960. Othón P. Blanco, Quintana Roo, México. [3] Instituto de Ciencias Agropecuarias y Rurales (ICAR), Universidad Autónoma del Estado de México, Campus UAEM El Cerrillo, El Cerrillo Piedras Blancas, Toluca, Estado de México, C.P. 50090, México. [4] Escuela Superior de Ciencias Agropecuarias, Universidad Autónoma de Campeche, C. 53 s/n, Unidad Esfuerzo y Trabajo I, Escárcega, Campeche, C.P. 24350, México. [5] Tecnologico Nacional de México Campus I. T. de Tizimín, Avenida Cupules km 2.5, Tizimín Yucatán, CP. 97700, México. [6] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, México. Carretera Villahermosa-Teapa, km 25, R/a. La Huasteca 2ª. Sección, Villahermosa, Tabasco, C.P. 86280, México
Resumen	This study evaluated three continuous grazing systems: *Brachiaria Brizantha*, *Clitoria ternatea* and naturalized pastures, complemented with commercial concentrate and *C. ternatea* silage on milk yield, nutrient use and enteric methane (CH_4) emissions. Nine multiparous cows of local Zebu breeds, with an average weight of 448 ± 87 kg, were used. The chemical composition of the food was determined. Live weight, milk production, and quality were assessed. Furthermore, serum urea, urea nitrogen, creatinine and glucose in blood were monitored, and nitrogen use efficiency were calculated. Enteric methane (CH_4) emissions were estimated using Tier-2 methodology. A 3 × 3 latin square experimental design was applied. The grazing systems of *B. brizantha* and *C. ternatea* had the greater live weights of 465.8 and 453.3 kg/cow, although the latter is similar to naturalized pasture. Milk production and quality were not affected by grazing system, with the exception of the non-fat solids, where the *C. ternatea* system was lower (102.2 g/kg) than the other grazing systems. The crude protein and N intake, and N excretion in feces and urine were lower in naturalized pasture systems (1139.0 g/day). N outputs in milk was high in the *C. ternatea* system (56.3 g/cow/day). The naturalized pastures systems showed the better feed use efficiency (25.7%) compared to others. Serum urea and blood urea nitrogen were greater in *B. brizantha* followed by *C. ternatea*. Enteric CH_4 emissions were indifferent among grazing systems when expressed as a percentage of greenhouse gases (7.1%). In conclusion, the grazing *C. ternatea* supplemented with commercial concentrate and *C. ternatea* silage maintains milk production and quality, reduced cow/day emissions (by 2.5%) and lowered energy losses as methane.

Palabras claves	*Clitoria ternatea*; Family production; Greenhouse gases; Milk quality; Pasture management.

Revista	**JOURNAL OF CATALYSIS**
ISSN	1090-2694
DOI	https://doi.org/10.1016/j.jcat.2023.115272
Título del Artículo	Improved phenol degradation by catalytic wet air oxidation on the Co_3O_4 spinel catalysts supported on SBA-15 modified with TiO_2
Autores e instituciones de adscripción	D.Y. López Chico [1]; H. Pérez Vidal [1]; G. Torres [1]; M.A. Lunagómez [1]; B. Pawelec [2]; R.M. Navarro Yerga [2]; P.J. Vázquez Salas [3]; T.A. Zepeda [3] [1] Centro de Investigación de Ciencia y Tecnología Aplicada de Tabasco (CICTAT), Universidad Juárez Autónoma de Tabasco, Carretera Cunduacán−Jalpa de Méndez Km. 1, Cunduacán 86690, Mexico [2] Instituto de Catálisis y Petroleoquímica, CSIC, Cantoblanco, Marie Curie 2, 28049 Madrid, Spain [3] Universidad Nacional Autónoma de México, Centro de Nanociencias y Nanotecnología, Carretera Tijuana− Ensenada Km. 107, Ensenada B.C. 22800, Mexico
Resumen	The removal of phenol from aqueous industrial effluents by catalytic wet-air oxidation (CWAO) is a challenging process that requires novel catalysts resistant to leaching of the active phases during residence time in a batch reactor. In this sense, this work demonstrated that this can be archived with the catalyst having the spinel phase Co_3O_4 supported on mesoporous silica SBA-15 doped with an optimized amount of TiO_2 (3 wt%). In the phenol CWAO reaction carried out at 160 °C and 10 bar O_2, this best Co_3O_4/TiO_2/SBA-15 catalyst showed an increase of phenol conversion from 49.0 % to 68.3 % and of CO_2 selectivity from 87 % to 98 %. The extensive catalyst characterization and overall activity results indicated that this was related to the strength and nature of the acid sites and the oxidation states of the cobalt oxide phases. Combined factors influenced the final behaviour of the catalyst, such as its intrinsic activity, dispersion of the active phase, inhibition of $CoSiO_4$ phase formation, high Lewis acidity and the large amount of active Co_3O_4 spinel phase. The presence of TiO_2 nanoparticles (NPs) decorating the support surface improved the stability of the catalyst by inhibiting the leaching of cobalt species during the reaction. After three reaction cycles, the most efficient Co/3Ti/S15 catalyst showed high CO_2 selectivity (~92.7 %) and low selectivity towards carboxylic acid (~5.3 %) and polyphenolic compounds (~2%). It is proposed that surface oxidation is the rate-determining step in the CWAO reaction over TiO_2/SBA-15-supported Co_3O_4 spinel catalysts.
Palabras claves	Cu/CeO2; Characterization; wet air oxidation: phenol;2-dichlorophenol, p-nitrophenol

Revista	**ENERGY**
ISSN	1873-6785
DOI	https://doi.org/10.1016/j.energy.2024.132155
Título del Artículo	Improvement of a double flash cycle using a heat exchanger with liquid cooling and liquid splitting technology for a geothermal power plant
Autores e instituciones de adscripción	Lili M. Toledo Paz [1]; Darío Colorado Garrido [2]; Roberto A. Conde Gutiérrez [2]; José Vidal Herrera Romero [3]; Mauricio Alberto Escalante Soberanis [4] [1] Universidad Juárez Autónoma de Tabasco, Avenida Universidad S/N, Zona de la Cultura, Col. Magisterial, Villahermosa, 86040, Tabasco, Mexico [2] Centro de Investigación en Recursos Energéticos y Sustentables (CIRES), Universidad Veracruzana, Av. Universidad Veracruzana Km. 7.5, Col. Santa Isabel I, Coatzacoalcos, 96538, Veracruz, Mexico [3] Facultad de Ingeniería, Universidad Veracruzana, Av. Universidad Veracruzana Km. 7.5, Col. Santa Isabel I, Coatzacoalcos, 96538, Veracruz, Mexico [4] Facultad de Ingeniería, Universidad Autónoma de Yucatán, Industrias No Contaminantes, Periferico Norte, Merida, 97302, Yucatan, Mexico
Resumen	A heat exchanger was integrated to increase the efficiency of a geothermal double flash cycle and decrease the liquid content at a low-pressure turbine outlet. The liquid cooling (LC) and liquid splitting technologies have three different configurations: i.) steam superheating (SH), ii.) steam reheating (RH) and iii.) mixture heating (MH) was implemented. An exergoeconomic analysis was applied to the systems and analyzed using geothermal power plant operation parameters. An increase in the net power of the double flash cycle of 418.6 kW was achieved with LC-SH configuration, 5008.6 kW with LC-RH,

Resumen	5248.6 kW with LC-MH, 3758.61 kW with LS-RH and 3958.61 with LS-MH. The power of the low-pressure turbine also increased compared to the double flash design in a 0.5236% (SH), 5.48%(RH), and 5.72%(MH), and the produced electricity cost were 5.9963 $USD/GJ, 5.9976 $USD/GJ, 6.0089 $USD/GJ, 6.0086 $USD/GJ, 5.9336 $USD/GJ, 5.9482 $USD/GJ and 5.9481 $USD/GJ for the double flash, DF-LC-SH, DF-LC-RH, DF-LC-MH, DF-LS-SH, DF-LS-RH, and DF-LS-MH designs, respectively. The DF-LS-SH design is the most feasible because the cost of electricity produced is reduced while the steam quality of the low-pressure turbine and the net power of the geothermal plant increases.
Palabras claves	Exergoeconomics; Exergy costing; Steam fraction; Low pressure turbines; Interstage.

Revista	**DESALINATION AND WATER TREATMENT**
ISSN	1944-3986
DOI	https://doi.org/10.5004/dwt.2023.29961
Título del Artículo	Improvement of photocatalysis using ZnO/zeolite nanocomposites for contaminant removal in aqueous media
Autores e instituciones de adscripción	Fanny Servín de Dios [1]; Erik Ramírez Morales [1]; Marcela del Carmen Arellano Cortaza [1]; Germán Pérez Hernández [1]; Erika Viviana Miranda Mandujano [1]; Edicson Macedonio López Alejandro [1]; Lizeth Rojas Blanco [1] [1] Universidad Juárez Autónoma de Tabasco, Avenida Universidad S/N, Col. Magisterial, Villahermosa, Tabasco. CP. 86040, México
Resumen	In order to take advantage of the adsorbent capacity of zeolites, in the present work, ZnO particles and ZnO/zeolite nanocomposites were synthesized, using a natural zeolite and a synthetic zeolite structure. Compounds of: ZnO, ZnO/CLI (CLI = clinoptilolite zeolite) and ZnO/NaA (NaA = sodium type A zeolite) were synthesized by the sol–gel method and physical milling. The structural, morphological, textural and optical properties of the materials were characterized by X-ray diffraction, scanning electron microscopy and transmission electron microscopy, N_2 physisorption and UV-Vis spectroscopy. Nanocomposites with crystallite sizes between 20–30 nm were obtained. The morphology presents grains distributed in the composites, while agglomerates are observed in pure ZnO. The ZnO surface area decreases slightly in the CLI composite but in the ZnO/NaA composites the decrease is notable. The band gap of the materials is between 3.18–3.21 eV. Photocatalytic activity was evaluated using aqueous solutions of organic dyes such as methylene blue and rhodamine B at initial concentrations of 10 and 20 mg·L^{-1}. The photocatalytic performance increased ~60%, which shows that the use of semiconductor oxides supported on zeolites is a viable and efficient process in the reduction of contaminants present in wastewater.
Palabras claves	Zinc oxide; Clinoptilolite; NaA; Semiconductors; Aluminosilicates

Revista	**REUMATOLOGÍA CLÍNICA**
ISSN	1885-1398
DOI	https://doi.org/10.1016/j.reumae.2024.10.002
Título del Artículo	Inclusion Body Myositis: A Late Diagnosis Case Report
Autores e instituciones de adscripción	Deysi Andrea Hernández Rivero [1]; Lisette Bazán Rodríguez [2]; María del Pilar Cruz Domínguez [3]; Gabriela Medina [4]; Ana Lilia Peralta Amaro [5]; Olga Vera Lastra [5] [1] División Académica Multidisciplinaria de Comalcalco. Universidad Juárez Autónoma de Tabasco, Comalcalco, Tabasco, México [2] Departamento de Enfermedades Neuromusculares. Hospital de Especialidades «Dr. Antonio Fraga Mouret». Centro Médico Nacional «La Raza», Ciudad de México, México [3] Dirección de Investigación y Educación. Hospital de Especialidades «Dr. Antonio Fraga Mouret». Centro Médico Nacional «La Raza», Ciudad de México, México [4] Unidad de Investigación Traslacional. Hospital de Especialidades «Dr. Antonio Fraga Mouret». Centro Médico Nacional «La Raza», Ciudad de México, México [5] Departamento de Medicina Interna. Hospital de Especialidades «Dr. Antonio Fraga Mouret». Centro Médico Nacional «La Raza», Ciudad de México, México

Resumen	Inclusion body myositis is an idiopathic inflammatory myopathy characterized by muscle weakness and dysphagia, with muscle biopsy showing inflammation and rimmed vacuoles. We present the case of a patient who was diagnosed with polymyositis but due to lack of response to treatment, a new biopsy revealed inclusion body myositis
Palabras claves	Creatinine kinase; Idiopathic inflammatory myopathy; Inclusion body myositis; Muscle weakness; Rimmed vacuoles

Revista	**PLOS ONE**
ISSN	1932-6203
DOI	10.1371/journal.pone.0300864
Título del Artículo	Inclusion of chia seeds (*Salvia hispanica L.*) and pumpkin seeds (*Cucurbita moschata*) in dairy sheep diets
Autores e instituciones de adscripción	Lizbeth E. Robles Jiménez [1]; Edgar Aranda Aguirre [1]; María de los Ángeles Colin Cruz [2]; Beatriz Schettino Bermúdez [3]; Rey Gutiérrez Tolentino [3]; Alfonso J Chay Canul [4]; Ricardo A. García Herrera [4]; Navid Ghavipanje [5]; Octavio A. Castelán Ortega [1]; Einar Vargas-Bello Pérez [6 7]; Manuel González Ronquillo [1] [1] Facultad de Medicina Veterinaria y Zootecnia, Departamento de Nutricion Animal, Universidad Autonoma del Estado de Mexico, Toluca, State of Mexico, Mexico. [2] Facultad de Quimica, Universidad Autonoma del Estado de Mexico, El Cerrillo Piedras Blancas, Toluca, México. [3] Departamento de Producción Agrícola Animal, Universidad Autónoma Metropolitana Xochimilco, Villa Quietud, Coyoacán, Cd. de México, México. [4] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Carretera Villahermosa-Teapa, Villahermosa, Tabasco, México. [5] Faculty of Agriculture, Department of Animal Science, University of Birjand, Birjand, Iran. [6] Facultad de Zootecnia y Ecología, Universidad Autónoma de Chihuahua, Chihuahua, Mexico. [7] Department of Animal Sciences, School of Agriculture, Policy and Development, University of Reading, Earley Gate, Reading, United Kingdom.
Resumen	Chia (*Salvia hispanica L.*) seed (CS) and Pumpkin (*Cucurbita moschata*) seed (PS) are used in ruminant diets as energy sources. The current experiment studied the impact of dietary inclusion of CS and PS on nutrient intake and digestibility, milk yield, and milk composition of dairy sheep. Twelve primiparous Texel × Suffolk ewes [70 ± 5 days in milk (DIM); 0.320 ± 0.029 kg milk yield] were distributed in a 4 × 3 Latin square design and fed either a butter-based control diet [CON; 13 g/kg dry matter] or two diets with 61 g/kg DM of either CS or PS. Dietary inclusion of CS and PS did not alter live weight (p >0.1) and DM intake (p >0.1). However, compared to the CON, dietary inclusion of both CS and PS increased the digestibility of neutral detergent fiber (p <0.001) and acid detergent lignin (p < 0.001). Milk production (p = 0.001), fat-corrected milk (p < 0.001), and feed efficiency (p < 0.001) were enhanced with PS, while the highest milk protein yield (p < 0.05) and lactose yield (p < 0.001) were for CS-fed ewes. Compared to the CON diet, the ingestion of either CS and/or PS decreased (p < 0.001) the C16:0 in milk. Moreover, both CS and PS tended to enhance the content of C18:3n6 (p > 0.05) and C18:3n3 (p > 0.05). Overall short-term feeding of CS and/or PS (up to 6.1% DM of diet) not only maintains the production performance and digestibility of nutrients but also positively modifies the milk FA composition.
Palabras claves	N/A

Revista	**NUTRIENTS**
ISSN	eISSN: 2072-6643
DOI	https://doi.org/10.3390/nu16091275
Título del Artículo	Increased Depressive-like, Anxiety-like, and Perseverative-like Behavior in Binge Eating Model in Juvenile Rats
Autores e instituciones de adscripción	Alma Delia Genis Mendoza [1]; Isela Esther Juárez Rojop [2]; Yudy Merady Escobar Chan [2]; Carlos Alfonso Tovilla Zárate [3]; María Lilia López Narváez [3]; Humberto Nicolini [1]; Thelma Beatriz González Castro [4]

Autores e instituciones de adscripción	[1] Laboratorio de Genómica de Enfermedades Psiquiátricas y Neurodegenerativas, Instituto Nacional de Medicina Genómica, Ciudad de México 14610, Mexico [2] División Académica de Ciencias de la Salud, Universidad Juárez Autónoma de Tabasco, Villahermosa 86100, Mexico [3] División Académica Multidisciplinaria de Comalcalco, Universidad Juárez Autónoma de Tabasco, Comalcalco 86650, Mexico [4] División Académica Multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, Jalpa de Méndez 86205, Mexico
Resumen	The aim of the present study was to evaluate depressive-like, anxiety-like, and perseverative-like behaviors in a binge eating model. Juvenile Wistar rats, using the binge eating model, were compared to caloric restriction, induced stress, and control groups. Rats of the induced stress group presented binge-like behaviors in standard food intake in the second cycle of the experiment when compared to the caloric restriction group and the binge eating model group. Depressive-like behavior was observed in the binge eating model group with longer immobility time ($p < 0.001$) and less swim time ($p < 0.001$) in comparison to the control group. Anxiety-like behavior was observed by shorter duration of burying latency in the binge eating model group when compared to the induced stress group ($p = 0.04$) and a longer duration of burying time when compared to the control group ($p = 0.02$). We observed perseverative-like behavior by the binge model group, who made more entries to the new arm ($p = 0.0004$) and spent a longer time in the new arm when compared to the control group ($p = 0.0001$). Our results show differences in behaviors between the groups of rats studied. These results suggest that calorie restriction–refeeding, along with stress, may lead to depressive-like, anxiety-like, and perseverative-like behavioral changes in male Wistar rats.
Palabras claves	Binge-like eating; depressive-like; anxiety-like; perseverative-like; animal model

Revista	**NITROGEN SWITZERLAND**
ISSN	eISSN: 2504-3129,
DOI	https://doi.org/10.3390/nitrogen5030037
Título del Artículo	Increasing Wheat Protein and Yield through Sulfur Fertilization and Its Relationship with Nitrogen
Autores e instituciones de adscripción	Gustavo A. Roa [1,2]; Eber Addí Quintana Obregón [3]; Mariela González Rentería [4]; Dorivar A. Ruiz Diaz [1] [1] Department of Agronomy, Kansas State University, Manhattan, KS 66506, USA [2] Maestría en Seguridad Alimentaria, Universidad Abierta y Distancia de Mexico (UnADM), Mexico City 03330, Mexico [3] CONAHCYT-Centro de Investigación en Alimentación y Desarrollo, A.C. Coordinación de Tecnología de Alimentos de Origen Vegetal, Hermosillo 83304, Mexico [4] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Villahermosa 86298, Mexico
Resumen	Sulfur fertilization plays a crucial role in wheat (*Triticum aestivum* L.) production, influencing both protein concentration and grain yield. Wheat, being one of the most important food crops globally, requires efficient management of essential nutrients, including sulfur and nitrogen, to achieve optimal production. This study aimed to quantify the effect of sulfur fertilization on wheat protein concentration and grain yield and the relationship with nitrogen through two complementary methods: a comprehensive meta-analysis and a controlled greenhouse experiment. The meta-analysis, encompassing 55 studies from 20 countries with 545 comparisons, quantified the overall response of wheat to sulfur fertilization in diverse field environments, examining the effects based on soil texture and organic matter content. The greenhouse study investigated the effects of varying sulfur application rates and sources on protein concentration and grain yield and analyzed the relationship between sulfur and nitrogen concentrations in the grain. The meta-analysis showed overall positive effects of sulfur application on both protein concentration (2.1%) and grain yield (4.2%), with the magnitude of these effects varying based on soil texture and organic matter content. Sandy soils and soils with low organic matter content exhibited the most pronounced responses to sulfur fertilization. The greenhouse experiment revealed responses of both protein concentration and grain yield to increasing sulfur application rates, indicating an optimal rate beyond which additional sulfur may not provide further benefits. A strong positive correlation between sulfur and nitrogen concentrations in the grain highlighted their interdependence in wheat nutrition. These findings emphasize the importance of

Resumen	considering soil properties and the sulfur–nitrogen interaction when developing site-specific sulfur fertilization strategies for wheat. The results provide valuable insights for optimizing grain yield and protein concentration, contributing to more sustainable and efficient wheat production systems.
Palabras claves	Sulfur fertilization; wheat; protein content; grain yield; soil fertility

Revista	**JOURNAL OF SOL-GEL SCIENCE AND TECHNOLOGY**
ISSN	1573-4846
DOI	https://doi.org/10.1007/s10971-024-06363-3
Título del Artículo	Influence of Cu content in CeO_2 nanoparticles on their antibacterial properties
Autores e instituciones de adscripción	Limny Esther Pérez Jiménez [1]; Erik Ramírez Morales [1]; Laila Nayzzel Muñoz Castellanos [2]; Lizeth Rojas Blanco [1]; Francisco Paraguay Delgado [3] [1] Universidad Juárez Autónoma de Tabasco, Av. Universidad S/N, Zona de la Cultura, Col. Magisterial, Vhsa, Centro, 86040, Villahermosa, Tabasco, México [2] Universidad Autónoma de Chihuahua, Facultad de Ciencias Químicas, Circuito Universitario, Campus Universitario No. 2, 31125, Chihuahua, Chihuahua, México [3] Centro de Investigación en Materiales Avanzados, S.C. (CIMAV), Av. Miguel de Cervantes #120, Complejo Industrial Chihuahua, Chihuahua, Chih, C.P. 31136, México
Resumen	The CeO_2 nanoparticles (NPs) with different Cu contents were synthesized, and their antibacterial activity was evaluated quantitatively. It was performed for two of the antibiotic-resistant microorganisms that require urgent attention. The materials were synthesized by co-precipitation method in an alkaline medium (pH 9) using a concentration of 20 mM of Cerium nitrate with three different amounts of Copper nitrate (1, 3, and 5 wt%) content. Polyvinylpyrrolidone was used as a dispersing agent, and ammonium hydroxide was used as a precipitant. The obtained NPs were characterized using different techniques to determine the change in properties due to the Cu dopant amount. The X-ray diffraction, electron microscope techniques, and BET method were used to know the particle's structure, morphology, and porosity. From diffraction patterns, all samples showed a cubic CeO_2 structure and no additional peaks belonging to Cu or CuO phases. The crystal size and lattice parameters obtained by Rietveld refinement of XRD patterns decrease slightly according to Cu content, and the d-space of (1 1 1) plane is agreed with the shifting of this intensity toward low angles (2θ). The SEM images show agglomerated particles with sizes between 0.2 and 4 µm, and the TEM images show spherical shape particles with sizes between 7 and 9 nm. The elemental mapping analysis revealed that the Cu atoms are dispersed in the CeO_2 particles. All samples show a specific surface area between 90 and 130 m^2/g, and there are ink-bottle-shaped mesopores. The quantitative antibacterial test was evaluated according to the ASTM E2149-20 standard procedure. The highest inhibition against *Pseudomonas aeruginosa* (ATCC 27853) was 72%, with the sample containing 3 wt% Cu. Meanwhile, the antibacterial activity against *Staphylococcus aureus* (ATCC 25923) was 48% with the highest Cu Content (5 wt%) with 48 µg/mL of NPs. A significant difference was observed between the antibacterial activity of pure CeO_2 and Cu-doped CeO_2 NPs. However, increasing the Cu content in the CeO_2 NPs or increasing the concentration of NPs for the evaluation is necessary to find adequate inhibition for this bacterium.
Palabras claves	Cu-CeO2; Antibacterial activity; Co-precipitation synthesis; *P. aeruginosa*; *S. aureus*

Revista	**ZOONOSES AND PUBLIC HEALTH**
ISSN	1863-1959
DOI	https://doi.org/10.1111/zph.13110
Título del Artículo	Influenza A virus antibodies in dogs, hunting dogs, and backyard pigs in Campeche, Mexico
Autores e instituciones de adscripción	Maya-Badillo BA [1,2]; Orta Pineda G [1]; Zavala Vasco D [2]; Rivera Rosas KE [2]; Uribe Jacinto A [3]; Segura Velásquez R [4]; Suzán G [1]; Sánchez Betancourt JI [2] [1] Laboratorio de Ecología de Enfermedades y Una Salud, Departamento de Fauna Silvestre y Animales de Laboratorio, Facultad de Medicina Veterinaria y Zootecnia, Universidad Nacional Autónoma de México, Mexico City, Mexico. [2] Grupo de Investigación del Departamento de Medicina y Zootecnia de Cerdos, Facultad de Medicina y Zootecnia, Universidad Nacional Autónoma de México, Mexico City, Mexico.

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Resumen	**Aims:** This study aimed to identify exposure to human, swine, and avian influenza A virus subtypes in rural companion and hunting dogs, backyard pigs, and feral pigs. **Methods and results:** The study took place in a region of southeastern Mexico where the sampled individuals were part of backyard production systems in which different domestic and wild species coexist and interact with humans. We collected blood samples from pigs and dogs at each of the sites. We used a nucleoprotein enzyme-linked immunosorbent assay to determine the exposure of individuals to influenza A virus. Haemagglutination inhibition was performed on the positive samples to determine the subtypes to which they were exposed. For data analysis, a binomial logistic regression model was generated to determine the predictor variables for the seropositivity of the individuals in the study. We identified 11 positive individuals: three backyard pigs, four companion dogs, and four hunting dogs. The pigs tested positive for H1N1 and H1N2. The dogs were positive for H1N1, H1N2, and H3N2. The model showed that dogs in contact with backyard chickens are more likely to be seropositive for influenza A viruses. **Conclusions:** We demonstrated the essential role hunting dogs could play as intermediate hosts and potential mixing vessel hosts when exposed to human and swine-origin viral subtypes. These results are relevant because these dogs interact with domestic hosts and humans in backyard systems, which are risk scenarios in the transmission of influenza A viruses. Therefore, it is of utmost importance to implement epidemiological surveillance of influenza A viruses in backyard animals, particularly in key animals in the transmission of these viruses, such as dogs and pigs.
Palabras claves	Domestic animals; hunting; influenza; interface; serology; wildlife.

Revista	**ARCHIVES OF RHEUMATOLOGY**
ISSN	eISSN: 2618-6500
DOI	https://doi.org/10.46497/ArchRheumatol.2024.10108
Título del Artículo	Interactions between TNFAIP3, PTPN22, and TRAF1-C5 gene polymorphisms in patients with primary Sjögrens syndrome
Autores e instituciones de adscripción	Daniel Cadena Sandoval [1]; Isela Montúfar Robles [2]; Rosa Elda Barbosa Cobos [5]; Gabriela Hernández Molina [6]; Ana Karen Salas García [5]; Norma Sánchez Zauco [3]; Julian Ramírez Bello [4] [1] Universidad Juárez Autónoma De Tabasco, Comalcalco Multidisciplinary Academic Division, Comalcalco, Tabasco, Mexico [2] División De Investigación, Hospital Juárez De México, Ciudad De México, Mexico [3] División De Diagnostico Y Tratamientos Auxiliares, Centro Médico Nacional Siglo Xxi, Ciudad De México, Mexico [4] Subdirección de Investigación Clínica, Instituto Nacional De Cardiologia Ignacio Chávez, Ciudad De Mexico, Mexico [5] Departamento De Reumatología, Hospital Juárez De México, Ciudad De México, Mexico [6] Departamento De Inmunología Y Reumatología, Instituto Nacional De Ciencias Médicas Y Nutrición, Ciudad de México, Mexico
Resumen	**Objectives:** The aim of our study was to investigate whether TNFAIP3, PTPN22, and TRAF1-5 single nucleotide polymorphisms (SNPs) are associated with susceptibility, severity, or serological markers in primary Sjögren's syndrome (pSS). **Patients and methods:** The cases and controls study was conducted between December 2021 and June 2022. TNFAIP3 rs10499194C/T, rs6920220G/A, and rs2230926T/G, PTPN22 rs2476601C/T and rs33996649G/A, and TRAF1-C5 rs10818488G/A polymorphisms were genotyped in 154 female pSS patients (mean age: 45.2±6.8 years) and 313 female control subjects (mean age: 50.3±7.5 years) using the TaqMan® SNP genotyping assay. An association analysis between TNFAIP3, PTPN22, and TRAF1-C5 SNPs and susceptibility, clinical characteristics, and serological markers of pSS was performed. Interactions between TNFAIP3, PTPN22, and TRAF1-C5 SNPs were also evaluated in patients and controls. **Results:** The genotype and allele frequencies showed no association with susceptibility, severity, or serological markers of pSS. Nevertheless, several interactions between TNFAIP3 and TRAF1-C5 or TNFAIP3, PTPN22, and TRAF1-C5 genotypes were associated with susceptibility to pSS ($p<0.01$). **Conclusion:** Individual TNFAIP3, PTPN22, and TRAF1-C5 SNPs are not associated with susceptibility, severity, or serological markers of pSS. However, genetic interactions between TRAF1-C5 and TNFAIP3 or TNFAIP3, PTPN22, and TRAF1-C5 SNPs are risk factors for pSS.

Palabras claves	Genetic interaction, primary Sjögren's syndrome, PTPN22, TNFAIP3, TRAF1-C5.

Revista	**AIBI, REVISTA DE INVESTIGACIÓN, ADMINISTRACIÓN E INGENIERÍAS**
ISSN	2346-030X
DOI	https://doi.org/10.15649/2346030X.3434
Título del Artículo	Internal and external competitiveness of small industrial companies in COVID-19.
Autores e instituciones de adscripción	María del Carmen Sandoval Caraveo [1]; Edith Georgina Surdez Pérez [1]; Clara Luz Lamoyi Bocanegra [1] [1] Universidad Juárez Autónoma de Tabasco, Villahermosa - México
Resumen	The industrial sector represents a priority activity for the economic development of the country. Sustaining its permanence in the market in the face of the difficult situation it has faced as a result of the Covid 19 pandemic is a challenge for businessmen and for the Mexican government. Given this complicated scenario, the objective of this research was to evaluate the internal and external competitiveness of small companies in the industrial sector in the context of the COVID-19 pandemic and the relationship between both types of competitiveness in Tabasco, Mexico. The study had a quantitative approach, non-experimental transactional, descriptive, and correlational design. Internal competitiveness was analyzed with the dimensions of strategic planning, production, quality assurance, marketing, accounting and finance, and human resources. External competitiveness was measured with the profitability dimension through a one-dimensional scale. The findings indicate less internal competitiveness in the areas of marketing and human resources and greater in strategic planning. In external competitiveness, the results of profitability after the pandemic are located at an unfavorable level. Pearson's correlation analysis indicated a positive and significant relationship between the two types of competitiveness. This research provides relevant information on the conditions in which the competitiveness of small companies in the industrial sector is found in the context of the pandemic, it is useful to identify areas of opportunity and make the right decisions to improve this economic sector, essential for the economic growth of the country.
Palabras claves	Industrial sector; social confinement, businessmen, strategic planning, commercialization.

Revista	**SALUD, CIENCIA Y TECNOLOGÍA - SERIE DE CONFERENCIAS**
ISSN	2953-4860
DOI	https://doi.org/10.56294/sctconf2024634
Título del Artículo	Internationalization of the curriculum: Connectivism approach supported by relational leadership. A case study
Autores e instituciones de adscripción	Cuevas Álvarez, María Cruz [1]; Pérez Mendoza, Marcos [1]; Rojas León, Perla del Rocío [1]; Zetina Pérez, Carlos David [1]; Eslava Gómez, Hilda Ofelia [1]; Maldonado Guillén, Jeniffer Yajabibe [1] [1] Universidad Juárez Autónoma de Tabasco
Resumen	**Introduction:** previous to the world pandemic covid-19, professors from a Mexican Public HEIs, located in the south of the country, had been implementing educative platforms as an internationalization of the curriculum strategy to include technology in their teaching, specifically in DACEA division. The first institutional platform implemented in 2004 was Moodle, Socrative, and Edmodo was the second step by a group of 20 out of 250 professors until 2020 when Microsoft Teams became the institutional educative platform. **Method:** the objective of this qualitative article is to characterize the roles and responsibilities of educational actors in the new digital management derived from the covid-19 pandemic in a Mexican Public HEI. **Results:** The findings indicate that the institution homologated the use of an educative platform at an institutional level, a training on the use of this new platform was given only covering the technical aspects, but there was still the pedagogical training missing for Flipped Classroom Methodology. The Syndicate leader with the aid of a small group of active professors, provided an online training course oriented towards the certification of digital competences with the participation of 120 professors from the

Resumen	12 areas of the university. This work between the main educative actors: the institution and the syndicate leaders along with the professors has created the foundations for university engagement and a new administrative culture of collaboration. **Conclusion:** it is concluded that all educative parties when properly engaged can lead to the completion of objectives avoiding change resistance that sometimes arises specially when professors migrate from present mode to a distance mode.
Palabras claves	Internationalization of the Curriculum; Connectivism Approach; Relational Leadership; Higher Education

Revista	**JCR- JOURNAL OF CLINICAL RHEUMATOLOGY**
ISSN	1076-1608
DOI	https://doi.org/10.1097/rhu.0000000000002080
Título del Artículo	Intra-articular Injections for Treating Knee Osteoarthritis: A Classification According to Their Mechanism of Action
Autores e instituciones de adscripción	Pedro Iván Arias Vázquez [1] [1] From the MD Rehabilitation Medicine, Sports Medicine, Department of Rehabilitation, Universidad Juárez Autónoma de Tabasco, Comalcalco, México
Resumen	N/A
Palabras claves	Osteoarthritis, Knee, Intra-Articular Injections.

Revista	**AQUACULTURE**
ISSN	1873-5622
DOI	https://doi.org/10.1016/j.aquaculture.2024.741324
Título del Artículo	Intra-cohort cannibalism and aggressive behavior in tropical gar *Atractosteus tropicus* larvae: Effects of stocking density and starvation
Autores e instituciones de adscripción	C.A. Sepúlveda Quiroz [1,9]; C.S. Alvarez Villagómez [1]; C.A. Álvarez González [1]; L.D. Jiménez Martínez [2]; G.M. Pérez Jiménez [1]; G.G. Asencio Alcudia [1,9]; O. Mendoza Porras [3]; J.F. López Hernández [1,4]; A. Pérez Morales [5]; M.A. Galaviz Espinoza [6]; D. Tovar Ramírez [7]; C. Ramírez Martínez [8]; R. Martínez García [1] [1] Laboratorio de Fisiología en Recursos Acuáticos (LAFIRA), División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Carretera Villahermosa-Cárdenas Km 0.5., C.P.86039 Villahermosa, Tabasco, Mexico [2] División Académica Multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, Carretera estatal libre Villahermosa-Comalcalco Km 27 S/N, Ranchería, Jalpa de Méndez 86205, Tabasco, Mexico [3] CSIRO Livestock and Aquaculture, Queensland Bioscience Precinct, 306 Carmody Rd, St Lucia, QLD, Australia [4] Laboratorio de Bioprocesos, Centro Mexicano para la Producción más Limpia, Unidad Tabasco, Instituto Politécnico Nacional, Cunduacán CP 86691, Mexico [5] Centro Universitario de Investigaciones Oceanológicas, Universidad de Colima, Manzanillo, Mexico [6] Facultad de Ciencias Marinas, Universidad Autónoma de Baja California (UABC), Ensenada, Mexico [7] Laboratorio de Fisiología Comparada y Genómica Funcional, Centro de Investigaciones Biológicas del Noroeste, La Paz, Mexico [8] Universidad Autónoma de Nuevo León, Facultad de Medicina Veterinaria y Zootecnia, Monterrey, Nuevo León, Mexico [9] Tecnológico Nacional de México-Instituto Tecnológico de Villahermosa, carretera Villahermosa-Frontera, km 3.5, Ciudad Industrial, Villahermosa, Tabasco, Mexico
Resumen	Cannibalism in early fish developmental stages is a biological phenomenon affecting aquaculture, so seeding density and feeding schemes play a fundamental role in its optimal control. The objective of this research was to evaluate two initial stocking densities, 0.7 larvae/L (D7) and 1.4 larvae/L (D14), which were fed (F) and not fed (NF) in tropical gar (*Atractosteus tropicus*) larvae on growth, attacks, survival, and digestive enzyme activity, digestive morphology, and oxidative enzymes and aggressiveness gene expression. A total of 420 larvae (0.022 ± 0.003 g; 1.52 ± 0.10 cm) were placed in 70 L tanks connected to a recirculation system. Treatment F larvae were fed a formulated food. D14F larvae had the highest final weight, total length, and specific growth rate (SGR) ($p < 0.05$). The highest survival percentage was in D7F larvae (46.19 ± 2.74) ($p < 0.05$). The highest frequency of attacks occurred in D14F larvae (26.66 ± 0.82) ($p < 0.05$). The coefficient of variation

Resumen	(CV) and size heterogeneity (SH) were higher in D7F larvae (13.56 ± 1.80; 0.81 ± 0.10) ($p < 0.05$). The F larvae started attacks at 8 days after hatching (DAH), while the NF larvae showed it at 10 DAH. The difference in weight between the attacker and the attacked was 16.44 ± 9.75% and in total length 12.28 ± 4.57% ($p < 0.05$). Acid and alkaline protease, trypsin, and lipase activities presented differences between both factors, as well as the interaction between them. D14F larvae presented the highest Glutathione peroxidase (GPX) activity ($p < 0.05$), while D7-NF larvae registered the highest catalase (CAT) activity ($p < 0.05$). Superoxide dismutase (SOD) acgtivities only showed differences between F and NF larvae ($p < 0.05$). The liver presented the highest percentage of area with melanomacrophage centers (MMC) in D7-NF larvae, and hepatocytes with the highest area were recorded in D14F larvae ($p < 0.05$). In gut, the highest enterocytes were recorded in D14 F larvae ($p < 0.05$). *cat*, cck, and *gpx* expression did not show difference between feeding regimes. The expression of *sod1* and *sod2* in D7F and D14F treatments presented the highest expressions ($p < 0.05$). D7F larvae presented higher expression of *avp1*, crh, *htr1*, sstr1, th and tph1 genes ($p < 0.05$). Our results show that *A. tropicus* larvae D14F presented the highest growth and morphometric parameters and decreased CV and SH, which shows a more homogeneous growth. Regarding cannibalism, fed larvae (D7F, D14F) presented cannibalism in a greater proportion than unfed larvae regardless of density, however, it is necessary to analyze other physiological and social factors that could be related to the aggressiveness and cannibalism of the species.
Palabras claves	Aggression; Behavior; Intracohort cannibalism; Fish larvae issues; Fish larvae management

Revista	**CLINICAL JOURNAL OF SPORT MEDICINE**
ISSN	1050-642X
DOI	https://doi.org/10.1097/JSM.0000000000001234
Título del Artículo	Jumps and Plyometric Exercises in the Return to Play After Sports Injuries
Autores e instituciones de adscripción	Arias-Vázquez, Pedro Iván [1]; Quezada González, Héctor Ricardo [2]; Loeza Magaña, Pavel [3]; Castillo-Ávila, Rosa Giannina [1]; Hernández-Gil, Karen del Carmen [1]; Poblete-Magaña, Jesús [1] [1] Rehabilitation Department, Juarez Autonomous University of Tabasco, Tabasco, México [2] Rehabilitation Department and Sports Medicine, SportHabilia Clinic, México City, México; and [3] Rehabilitation Department, National Medical Center 20 November ISSSTE, México City, México. [
Resumen	**Background:** Jumps and plyometric exercises represent a fundamental component of high-intensity sports activities and must be included in the return to play programs after a sports injury. However, the scientific literature focused on the prescription methodology of these activities in the return to play programs is limited. **Objective:** The aim of this manuscript was to provide an overview of the aspects related to the incorporation of jumps and plyometric exercises in the return to play programs. **Results:** Some clinical criteria that the athlete must meet to be incorporated into jump work and plyometric exercises in return to play programs are capacity of the injured tissue to support the load, absence of symptoms, complete joint mobility, previous acquisition of basic motor patterns of the lower limbs, adequate level of strength and muscular balance and technically consolidated jump gesture. The methodological prescription of jumps and plyometric exercises in return to play programs must consider variables such as the type of jumps, intensity, volume, and execution surface, to guarantee adequate progression and minimize the risk of injury recurrence. **Conclusions:** Jumps and plyometric exercises are frequently included in intermediate and advanced phases of return to play programs but the information on their prescription in this area is scarce; we establish a methodological guide that can be useful for the prescription of jumps and plyometric exercises in return to play programs, based mainly on biomechanical studies that evaluate various aspects of the joint load during its execution.
Palabras claves	Jump exercise; plyometric exercise; return to play; sports injuries; sports rehabilitation

Revista	**CATALYSTS**
ISSN	eISSN:2073-4344
DOI	https://doi.org/10.3390/catal14070436
Título del Artículo	La-Modified SBA-15 Prepared by Direct Synthesis: Importance of Determining Actual Composition
Autores e instituciones de adscripción	Gloribel Morales Hernández [1]; José Escobar [2]; José G. Pacheco Sosa [1]; Mario A. Guzmán Cruz [3]; José G. Torres Torres [1]; Paz del Ángel Vicente [2]; María C. Barrera [4]; Carlos E. Santolalla Vargas [5]; Hermicenda Pérez Vidal [1] [1] Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias Básicas, Km. 1 Car. Cunduacán-Jalpa de Méndez, Col. La Esmeralda, 86690, Cunduacán, Tabasco, México [2] Instituto Mexicano del Petróleo, Eje Central Lázaro Cárdenas Norte 152, San Bartolo Atepehuacan, G.A. Madero, Cd. de México, 07730 [3] Universidad Juárez Autónoma de Tabasco, División Académica Multidisciplinaria de Jalpa de Méndez, Carr. Estatal Libre Villahermosa-Comalcalco Km. 27+000 s/n Ranchería Ribera Alta, 86205, Jalpa de Méndez, Tabasco, México [4] Facultad de Ciencias Químicas-Centro de Investigación en Recursos Energéticos y Sustentables, Universidad Veracruzana, Campus Coatzacoalcos, Av. Universidad km. 7.5, Col. Santa Isabel, Coatzacoalcos, Veracruz, 96538, México [5] Departamento de Biociencias e Ingeniería, Centro Interdisciplinario de Investigaciones y Estudios sobre Medio Ambiente y Desarrollo (CIIEMAD), Instituto Politécnico Nacional, 30 de junio de 1520 s/n, La Laguna Ticomán, G. A. Madero, 07340, Ciudad de México, México
Resumen	La integration (at various nominal contents) in SBA-15 prepared under acidic medium was intended from corresponding direct nitrate addition during mesoporous silica formation. Materials were impregnated with Pt (1.5 w%) and studied through several textural (N_2 physisorption), structural (XRD, TG-DTG) and surface (FTIR, STEM-HAADF, SEM-EDS, NH_3 and CO_2 TPD) instrumental techniques. Pt-impregnated solids were tested in phenol hydrodeoxygenation (HDO, T=250 °C, 3.2 MPa, batch reactor, n-decane as solvent). Catalytic activity (in pseudo first order kinetic constant, $_{kHDO}$ basis) was related to Pt dispersion which was, however, not determined by nominal rare earth content. Determining actual composition of modified SBA-15 materials is crucial in reaching sound conclusions regarding their physicochemical properties, especially when La modifier is directly added during mesoporous matrices formation where efficient interaction among constituents could be difficult to get. Otherwise, results from some characterization techniques (N_2 physisorption and FTIR, for instance) could be misleading and even contradictory. Indeed, extant modifier precursors when under SBA-15 synthesis conditions could affect the properties of prepared materials even though they were absent in obtained| formulations. Performing a simple compositional analysis could eliminate uncertainties regarding the role of various modifiers on characteristics of final catalysts. However, several groups have failed in doing so.
Palabras claves	SBA-15; lanthanum; materials composition; platinum; phenol HDO

Revista	**EUROPEAN PUBLIC AND SOCIAL INNOVATION REVIEW**
ISSN	2529-9824
DOI	https://doi.org/10.31637/epsir-2024-765
Título del Artículo	Nivel de adopción y comprensión de asistentes de inteligencia artificial por estudiantes de tecnologías de la información en una universidad del sureste de México
Autores e instituciones de adscripción	Cruz Romero, Rubicel [1]; Silva Payro, Martha Patricia [1]; Mena de la Rosa, Rafael [1] [1] Universidad Juárez Autónoma de Tabasco
Resumen	**Introducción:** En los últimos tiempos, la Inteligencia Artificial (IA) ha resurgido como una herramienta clave en la nueva era de la abundante información y la generación vertiginosa de datos. Esta etapa, llamada la cuarta revolución, reúne tecnologías que aprovechan los avances en computación para permitir acciones en tiempo real y contextuales, de ahí la importancia de estudiar el impacto que los Asistentes Virtuales con IA tienen y tendrán en el ámbito educativo. **Metodología:** Esta investigación se ha enfocado en el análisis cuantitativo para responder a las preguntas planteadas y recopilar datos medibles. **Resultados:** Los resultados reflejan una comunidad estudiantil dividida pero predominantemente abierta a la adopción de asistentes virtuales con IA. A la vista de los resultados, se puede afirmar que la IA tiene un gran potencial en la educación superior. **Discusión:** No obstante, es vital abordar los desafíos éticos y prácticos identificados para asegurar que su implementación sea efectiva y beneficiosa. Esto implica ofrecer la formación adecuada y desarrollar normativas claras. **Conclusiones:** Este nuevo desarrollo plantea un gran desafío para las universidades, ya que es una realidad que ya está presente y su adopción informal puede tener efectos negativos en la formación de los futuros profesionales de TI.

Palabras claves	Enseñanza asistida por ordenador, Encuesta, Enfoque científico, Análisis cuantitativo, Análisis de datos, docente, Enseñanza superior, percepción

Revista	**URBAN FORESTRY AND URBAN GREENING**
ISSN	1610-8167
DOI	https://doi.org/10.1016/j.ufug.2024.128521
Título del Artículo	Maintenance, operational costs, and plant performance in three extensive green roof designs from Northwest México
Autores e instituciones de adscripción	Diana Verónica López Silva [1]; Eric Sigala Meza [1]; Stephen H. Bullock [2]; Iván Hernández Pérez [3]; Daniel Sauceda Carvajal [4] Ivett Zavala Guillén [4]; Rodrigo Méndez Alonzo [2] [1] Doctorado en Ciencias de la Vida, Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California (CICESE), México [2] Departamento de Biología de la Conservación, Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California (CICESE), México [3] División Académica de Ingeniería y Arquitectura, Universidad Juárez Autónoma de Tabasco (DAIA-UJAT), Carretera Cunduacán-Jalpa de Méndez km. 1, Cunduacán, Tabasco 86690, México [4] Departamento de Electrónica y Telecomunicaciones, Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California (CICESE), México
Resumen	Green roofs (GR) are nature-based solutions for climate change adaptation and mitigation in buildings and cities. However, few GR maintenance, installation, and challenge-solving guidelines are available for semiarid climates. We present how three case-study types of GR (urban gardens (UGR), native gardens (NGR), and wetland roofs (WR)) varied in installation costs, irrigation volumes, maintenance times, vegetation cover, survival, biomass and yield, in Ensenada, México, from 2022 to 2023. In UGR, nine edible species were cultivated to yield produce; in NGR, six native plants were planted, and four were grown in WR. UGR installation costs were 31 % and 21 % lower, but maintenance costs were four and 1.5 times higher than NGR and WR, respectively. UGR consumed 17 % more water annually than NGR and 42 % less than WR. Likewise, UGR demanded 94 and 92 % more annual maintenance time than NGR and WR. WR presented the highest survival, height, cover, and biomass values, followed by NGR (except for biomass) and UGR. Our results point to different GR solutions for distinct types of applications and users, demonstrating their versatility in design. All GR categories are suitable to reduce the ecological footprint of buildings; however, we emphasize that each GR design involves different economic, time, and challenge-solving commitments that should be considered before installation and operation.
Palabras claves	Vegetated roof; Green infrastructure; Roof ponds; Sustainability; Urban agriculture; Mediterranean ecosystems; Baja California

Revista	**SMALL RUMINANT RESEARCH**
ISSN	1879-0941
DOI	https://doi.org/10.1016/j.smallrumres.2024.107254
Título del Artículo	Meta-analysis of organic chromium dietary supplementation on growth performance, carcass traits, and serum metabolites of lambs
Autores e instituciones de adscripción	Pedro Abel Hernández García [1]; José Felipe Orzuna Orzuna [2]; Alfonso Juventino Chay Canul [3]; Gabriela Vázquez Silva [4]; Cesar Díaz Galván [5]; Pablo Benjamín Razo Ortiz [1] [1] Centro Universitario UAEM Amecameca, Universidad Autónoma del Estado de México, Amecameca, Mexico [2] Departamento de Zootecnia, Universidad Autónoma Chapingo, Texcoco, Mexico [3] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Villahermosa, Mexico [4] Departamento El Hombre y su Ambiente, Universidad Autónoma Metropolitana—Xochimilco, Coyoacán, Ciudad de México, Mexico [5] Departamento de Producción Agrícola y Animal, Universidad Autónoma Metropolitana—Xochimilco, Ciudad de México, Mexico
Resumen	There are inconsistent results on the effects of organic chromium (OCr) dietary supplementation on productivity, carcass traits, and blood metabolites of sheep. Therefore, this study aimed to evaluate the effects of OCr dietary supplementation on growth performance, carcass traits, meat composition, and serum metabolites of lambs using a meta-analytical approach. The final database included 16 studies from which the variables

Resumen	of interest were obtained. Data were analyzed using a random effects model, and results are presented as weighted mean differences (WMD) between OCr-supplemented and non-OCr treatments. OCr dietary supplementation did not affect dry matter intake; however, average daily gain increased, and feed conversion ratio decreased in response to OCr dietary supplementation. Dietary supplementation with OCr increased hot carcass weight, hot carcass yield, cold carcass weight, and Longissimus dorsi muscle area but decreased backfat thickness. In meat, OCr supplementation increased Warner-Bratzler shear force and protein content and decreased intramuscular fat content. In the blood, OCr dietary supplementation increased the serum concentration of insulin and triiodothyronine. However, serum concentrations of glucose, cholesterol, triglycerides, and thyroxine decreased in response to OCr dietary supplementation. In conclusion, organic chromium can be used as a dietary additive to improve average daily gain and feed conversion ratio in lambs and, at the same time, improve carcass traits, meat chemical composition, and serum metabolites.
Palabras claves	N/A

Revista	**CURRENT MICROBIOLOGY**
ISSN	1432-0991
DOI	https://doi.org/10.1007/s00284-024-03651-7
Título del Artículo	Metformin Inhibits Zika Virus Infection in Trophoblast Cell Line
Autores e instituciones de adscripción	Manuel Adrián Velázquez Cervantes [1]; Orestes López Ortega [2]; Víctor Javier Cruz Holguín [1]; Luis Herrera Moro Huitrón [1]; Arturo Flores Pliego [3]; Ignacio Lara Hernández [4,5]; Mauricio Comas García [4,5]; Oscar Villavicencio Carrisoza [3]; Addy Cecilia Helguera Reppeto [2]; Haruki Arévalo Romero [6]; Edgar Ricardo Vázquez Martínez [7]; Moisés León Juárez [1] [1] Laboratorio de Virología Perinatal y Diseño Molecular de Antigenos y Biomarcadores, Departamento de Inmunobioquimica, Instituto Nacional de Perinatología, 11000, Mexico City, Mexico. [2] Institut National de la Santé et de la Recherche Médicale (INSERM) U1151, Institut Necker Enfants Malades, Université Paris Descartes, Sorbonne Paris Cité, Paris, France. [3] Departamento de Inmunobioquimica, Instituto Nacional de Perinatología, 11000, Mexico City, Mexico. [4] Sección de Microscopía de Alta Resolución, Centro de Investigación en Ciencias de la Salud y Biomedicina, Universidad Atunóma de San Luis Potrosí, San Luis Potosí, SLP, Mexico. [5] Facultad de Ciencias, Universidad Autónoma de San Luis Potosí, San Luis Potosí, SLP, Mexico. [6] Laboratorio de Inmunología y Microbiología Molecular, División Académica Multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, Jalpa de Méndez, Mexico. [7] Unidad de Investigación en Reproducción Humana, Instituto Nacional de Perinatología-Universidad Nacional Autónoma de México, 11000, Mexico City, Mexico.
Resumen	Zika virus (ZIKV) infections have been associated with severe clinical outcomes, which may include neurological manifestations, especially in newborns with intrauterine infection. However, licensed vaccines and specific antiviral agents are not yet available. Therefore, a safe and low-cost therapy is required, especially for pregnant women. In this regard, metformin, an FDA-approved drug used to treat gestational diabetes, has previously exhibited an anti-ZIKA effect *in vitro* in HUVEC cells by activating AMPK. In this study, we evaluated metformin treatment during ZIKV infection *in vitro* in a JEG3-permissive trophoblast cell line. Our results demonstrate that metformin affects viral replication and protein synthesis and reverses cytoskeletal changes promoted by ZIKV infection. In addition, it reduces lipid droplet formation, which is associated with lipogenic activation of infection. Taken together, our results indicate that metformin has potential as an antiviral agent against ZIKV infection *in vitro* in trophoblast cells.
Palabras claves	Metformin; AMPK; Zika virus; Pregnancy; Trophoblast; Lipids; antiviral

Revista	**FRONTIERS IN PSYCHOLOGY**
ISSN	1664-1078
DOI	https://doi.org/10.3389/fpsyg.2024.1346530
Título del Artículo	Mistakes are not an option: aggression from peers and other correlates of anxiety and depression in pediatricians in training

Autores e instituciones de adscripción	María Yoldi Negrete [1]; Diana Guízar Sánchez [2]; Rebeca Robles García [3]; Carlos Alfonso Tovilla Zárate [4]; Ricardo Arturo Saracco Álvarez [1]; Iñaki Navarro Castellanos [5]; Ana Carolina Hill de Titto [6]; Ana Fresán [1] [1] Subdirección de Investigaciones Clínicas, Instituto Nacional de Psiquiatría Ramón de la Fuente Muñíz, Mexico City, Mexico. [2] Departamento de Fisiología de la Facultad de Medicina, Universidad Nacional Autónoma de México, Mexico City, Mexico. [3] Centro de Investigación en Salud Mental Global, Instituto Nacional de Psiquiatría Ramón de la Fuente Muñíz, Mexico City, Mexico. [4] División Académica Multidisciplinaria de Comalcalco, Universidad Juárez Autónoma de Tabasco, Tabasco, Mexico. [5] Departamento de Cardiología Pediátrica, Hospital Regional Lic, Adolfo López Mateos, Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado, Mexico City, Mexico. [6] Departamento de Educación de Pre y Posgrado, Hospital Infantil de México Federico Gómez, Mexico City, Mexico.
Resumen	**Introduction:** Pediatricians in training are a population at risk for anxiety and depression: they face long working hours; they are confronted with the suffering and death of a vulnerable population and may have personal characteristics that put them in danger. Nonetheless, few studies have looked at their prevalence and associated factors. We aimed to compare demographic, professional activities, adversities and perfectionism personality features between a group of pediatricians in training with depression and/or anxiety and a group of pediatricians in training without depression nor anxiety and, to identify the variables that increase the probabilities of depression and/or anxiety in pediatricians in training. **Methods:** Pediatric residents who voluntarily answered an online survey distributed via personal and institutional social media channels from October 2019 to April 2021, as part of a cross-sectional study with medical specialists and residents from Mexico were included. Demographic information, professional activities and adversities, perfectionism personality features (Multidimensional Perfectionism Scale), depression and anxiety (ICD-11 PHC) were evaluated. For comparison purposes Chi-square tests (χ^2) and independent sample t-tests were used. A logistic regression analysis was used to identify those variables that increase the probabilities of depression and/or anxiety. **Results:** 934 pediatric residents answered the survey. 11.6% reported having depression and 20% anxiety. Being single, a history of anxious or depressive episodes, being the resident in charge of a patient who died, aggressions from colleagues and a high concern for errors were associated with current depression and/or anxiety. **Discussion:** Screening for depressive and anxious symptoms should be routinely performed from entry to the residency to favor early intervention. A shift from promoting perfectionism to a more compassionate training could serve a population facing so many adversities.
Palabras claves	Anxiety; depression; patient death; pediatricians in training; perfectionism.

Revista	**ENVIRONMENTAL RESEARCH**
ISSN	1096-0953
DOI	https://doi.org/10.1016/j.envres.2024.119371
Título del Artículo	Modulating temperature for Cu2ZnSnS4 CZTS synthesis via hot injection method and studying the photocatalytic efficiencies for the degradation of rhodamine 6G and methylene blue pollutants
Autores e instituciones de adscripción	Valentina Nava Murillo [1,2]; Darshana Rajput [2]; J. Manríquez [2]; Erika Bustos [2]; José de Jesús Pérez Bueno [2]; Divya Singh [3]; Harish Dubey [4]; Carlos Eduardo Frontana Vázquez [2]; S. Godavarthi [5]; Zakaryaa Zarhri [6]; Fabrizio Olivito [7]; Ashutosh Sharma [8]; Pravin Jagdale [9]; L.G. Arriaga [10]; Clifford P Kubiak [11]; Edilso Reguera [12]; J.A. Diaz Real [2]; Goldie Oza [11] [1] Departamento de Ingeniería Química, Universidad de Guanajuato, Guanajuato, Mexico [2] Centro de Investigación y Desarrollo Tecnológico en Electroquímica (CIDETEQ), Queretaro, 76703, Mexico [3] School of Biotechnology, Institute of Science, Banaras Hindu University, Varanasi. 221005, Uttar Pradesh, India [4] Department of Physics, Birla College of Arts, Science and Commerce, Thane Dist., Kalyan, MS, India [5] Investigadoras e Investigadores por México, División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Cunduacan, 86690, Tabasco, Mexico [6] CONACYT-Faculty of Chemical Sciences and Engineering, The Autonomous University of the State of Morelos (UAEM), Av. Universidad 1001, Col. Chamilpa, C.P. 62209, Cuernavaca, Morelos, Mexico [7] Department of Environmental Engineering, Universita della Calabria, 87036 Rende, Italy [8] Tecnologico de Monterrey, Centre of Bioengineering, NatProLab, Plant Innovation Lab, School of Engineering and Sciences, Queretaro 76130, Mexico [9] Circular Carbon, Hamburg, Germany

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Resumen	Cu_2ZnSnS_4 (CZTS) was synthesized following hot injection method and the process was optimized by varying temperature conditions. Four samples at different temperatures viz., 200, 250, 300 and 350 °C were prepared and analyzed using different characterization techniques. Based on the correlation between XRD, Raman and XPS, we conclude that the formation of ZnS and SnS_2 occurs at 350 °C but at 200 °C there is no breakdown of the complex as per XRD. According to Raman and XPS analysis, as the temperature rises, the bonds between the metals become weaker, which is visibly seen in Raman and XPS due to the minor peaks of copper sulfide. Scanning electron microscopic analysis confirmed nanometric particles which increase in size with temperature. The photocatalytic evaluation showed that CZTS synthesized at 200 °C performed efficiently in the removal of the two colorants, methylene blue and Rhodamine 6G, achieving 92.80% and 90.65%, respectively. The photocatalytic degradation efficiencies decreased at higher temperatures due to bigger sized CZTS particles as confirmed by SEM results. Computational simulations confirm that CZTS has a highly negative energy −25,764 Ry, confirming its structural stability and higher covalent than ionic character.
Palabras claves	CZTS; Dye degradation; Methylene blue; Photocatalysis; Rhodamine 6G; Temperature.

Revista	**PROCEEDINGS OF THE ROYAL SOCIETY B-BIOLOGICAL SCIENCES**
ISSN	1471-2954
DOI	https://doi.org/10.1098/rspb.2024.0412
Título del Artículo	Nascent transcription reveals regulatory changes in extremophile fishes inhabiting hydrogen sulfide-rich environments
Autores e instituciones de adscripción	Blair W Perry [1]; Kerry L McGowan [1]; Lenin Arias Rodríguez [2]; Sascha H Duttke [3]; Michael Tobler [4,5,6,]; Joanna L Kelley [7] [1] School of Biological Sciences, Washington State University, Pullman, WA 99164, USA. [2] División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco 86150, México. [3] School of Molecular Biosciences, Washington State University, Pullman, WA 99164, USA. [4] Department of Biology, University of Missouri-St Louis, St Louis, MO 63121, USA. [5] Whitney R. Harris World Ecology Center, University of Missouri-St Louis, St Louis, MO 63121, USA. [6] WildCare Institute, Saint Louis Zoo, St Louis, MO 63110, USA. [7] Department of Ecology and Evolutionary Biology, University of California Santa Cruz, Santa Cruz, CA 95060, USA.
Resumen	Regulating transcription allows organisms to respond to their environment, both within a single generation (plasticity) and across generations (adaptation). We examined transcriptional differences in gill tissues of fishes in the *Poecilia mexicana* species complex (family Poeciliidae), which have colonized toxic springs rich in hydrogen sulfide (H_2S) in southern Mexico. There are gene expression differences between sulfidic and non-sulfidic populations, yet regulatory mechanisms mediating this gene expression variation remain poorly studied. We combined capped-small RNA sequencing (csRNA-seq), which captures actively transcribed (i.e. nascent) transcripts, and messenger RNA sequencing (mRNA-seq) to examine how variation in transcription, enhancer activity, and associated transcription factor binding sites may facilitate adaptation to extreme environments. csRNA-seq revealed thousands of differentially initiated transcripts between sulfidic and non-sulfidic populations, many of which are involved in H_2S detoxification and response. Analyses of transcription factor binding sites in promoter and putative enhancer csRNA-seq peaks identified a suite of transcription factors likely involved in regulating H_2S-specific shifts in gene expression, including several key transcription factors known to respond to hypoxia. Our findings uncover a complex interplay of regulatory processes that reflect the divergence of extremophile populations of *P. mexicana* from their non-sulfidic ancestors and suggest shared responses among evolutionarily independent lineages.
Palabras claves	*Poecilia mexicana*; adaptation; capped-small RNA-sequencing; transcription factor; transcriptomics.

Revista	**TECHNOLOGIES**
ISSN	eISSN: 2227-7080
DOI	https://doi.org/10.3390/technologies12050059
Título del Artículo	Neural Network-Based Body Weight Prediction in Pelibuey Sheep through Biometric Measurements
Autores e instituciones de adscripción	Alfonso J. Chay Canul [1]; Enrique Camacho Pérez [2,3]; Fernando Casanova Lugo [4]; Omar Rodríguez Abreo [3,5]; Mayra Cruz Fernández [3,5]; Juvenal Rodríguez Reséndiz [6] [1] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Villahermosa 86280, Tabasco, Mexico [2] Facultad de Ingeniería, Universidad Autonoma de Yucatán, Mérida 97302, Yucatán, Mexico [3] Red de Investigación OAC Optimización, Automatización y Control, El Marques 76240, Querétaro, Mexico [4] Instituto Tecnológico de la Zona Maya, Tecnológico Nacional de México, Othón P. Blanco 77960, Quintana Roo, Mexico [5] División de Tecnologías Industriales, Universidad Politécnica de Querétaro, El Marques 76240, Querétaro, Mexico [6] Facultad de Ingeniería, Universidad Autónoma de Querétaro, Santiago de Querétaro 76010, Querétaro, Mexico
Resumen	This paper presents an intelligent system for the dynamic estimation of sheep body weight (BW). The methodology used to estimate body weight is based on measuring seven biometric parameters: height at withers, rump height, body length, body diagonal length, total body length, semicircumference of the abdomen, and semicircumference of the girth. A biometric parameter acquisition system was developed using a Kinect as a sensor. The results were contrasted with measurements obtained manually with a flexometer. The comparison gives an average root mean square error (RMSE) of 9.91 and a mean R^2 of 0.81. Subsequently, the parameters were used as input in a back-propagation artificial neural network. Performance tests were performed with different combinations to make the best choice of architecture. In this way, an intelligent body weight estimation system was obtained from biometric parameters, with a 5.8% RMSE in the weight estimations for the best architecture. This approach represents an innovative, feasible, and economical alternative to contribute to decision-making in livestock production systems.
Palabras claves	Small ruminants; neural network; weight estimation; intelligent systems; sheep; biometric measurements

Revista	**JOURNAL OF MEDICINAL FOOD**
ISSN	1096-620X
DOI	https://doi.org/10.1089/jmf.2023.0200
Título del Artículo	Neurological Restorative Effects of --Epicatechin in a Model of Gulf War Illness
Autores e instituciones de adscripción	Israel Ramírez Sánchez [1,2]; Viridiana Navarrete Yáñez [2]; Judith Espinosa Raya [2]; Iván Rubio Gayosso [2]; Carlos Palma Flores [2]; Patricia Mendoza Lorenzo [3]; Rosa Ordoñez Razo [4]; Javier Estrada Mena [5]; Guillermo Ceballos [2]; Francisco Villarreal [1,6] [1] School of Medicine, UCSD, La Jolla, California, USA. [2] Seccion de Estudios de Posgrado e Investigacion, Escuela Superior de Medicina, IPN, Ciudad de Mexico, Mexico. [3] Division Academica de Ciencias Basicas, Unidad Chontalpa, Universidad Juarez Autonoma de Tabasco, Villahermosa, Mexico. [4] Unidad de Investigacion Medica en Genetica Humana, Hosital de Pediatria, Centro Médico Nacional Siglo XXI, Ciudad de Mexico, México. [5] Escuela de Medicina, Universidad Panamericana, Benito Juarez, México. [6] VA San Diego Health Care, San Diego, California, USA.
Resumen	Gulf War Illness (GWI) afflicts US military personnel who served in the Persian Gulf War. Suspect causal agents include exposure to pyridostigmine (PB), permethrin (PM) and N, N-diethyl-m-toluamide (DEET). Prominent symptoms include cognitive deficits, such as memory impairment. In aging animal models, we have documented the beneficial effect of the flavanol (-)-epicatechin (Epi) on hippocampus structure and related function. Using a rat model of GWI, we examined the effects of Epi on hippocampus inflammation, oxidative stress, mitochondrial dysfunction, cell death/survival pathways, and memory endpoints. Male Wistar rats underwent 3 weeks of exposure to either vehicles or DEET, PM, PB, and stress. Subgroups of GWI rats were then allocated to receive orally 15 days of either water (vehicle) or 1 mg/kg/day of Epi treatment. Object recognition tasks were performed

Resumen	to assess memory. Hippocampus samples were analyzed. Epi treatment yields significant improvements in short- and long-term memory versus GWI rats. Hippocampus oxidative stress and pro-inflammatory cytokine levels showed significant increases with GWI that were largely normalized with Epi becoming comparable to controls. Significant increases in markers of hippocampus neuroinflammation and cell death were noted with GWI and were also largely reduced with Epi. Neuronal survival signaling pathways were adversely impacted by GWI and were partially or fully restored by Epi. Markers of mitochondrial function were adversely impacted by GWI and were fully restored by Epi. In conclusion, in an animal model of GWI, Epi beneficially impacts recognized markers of hippocampus neuroinflammation, oxidative stress, cell survival, neurotoxicity and mitochondrial function leading to improved memory.
Palabras claves	Gulf war; epicatechin; flavanols; memory.

Revista	**ACTAS ESPAÑOLAS DE PSIQUIATRÍA**
ISSN	1139-9287
DOI	https://doi.org/10.62641/aep.v52i5.1784
Título del Artículo	No Sex-based Differences in Self-reported Empathy between Patients with Schizophrenia and Control Subjects
Autores e instituciones de adscripción	Ricardo Saracco Álvarez [1]; Rebeca Robles García [2]; Yvonne Flores Medina [1]; José Luis Olivares Neumann [3]; Carlos Alfonso Tovilla Zárate [4]; Ruth Alcalá Lozano [1]; Raúl Iván Escamilla Orozco [5]; Ana Fresán [1] [1] Subdirección de Investigaciones Clínicas, Ramón de la Fuente Muñiz National Institute of Psychiatry, 14370 Ciudad de México, Mexico [2] Centro de Investigación en Salud Mental Global INPRFM-UNAM (CISMG), Dirección de Investigaciones Epidemiológicas y Psicosociales, Ramón de la Fuente Muñiz National Institute of Psychiatry, 14370 Ciudad de México, Mexico [3] Neurociencias Prisma A. C., 70216 San Luis Potosí, Mexico [4] División Académica Multidisciplinaria de Comalcalco, Universidad Juárez Autónoma de Tabasco, 36040 Centro, Tabasco, Mexico [5] Subdirección de Consulta Externa, Servicios Clínicos, Ramón de la Fuente Muñiz National Institute of Psychiatry, 14370 Ciudad de México, Mexico
Resumen	**Background:** Schizophrenia, oneofthemostdisabling disorders worldwide, is characterized by impaired empathy, which appears to be more common in women. **Methods:** This study aimed to compare empathy lev els between control subjects and patients with schizophre nia by sex. We compared sixty-two patients with schizophrenia and 166 control subjects. All participants completed the Empathy Quotient (EQ) questionnaire. A multivariate analysis of variance model wasperformedwith the EQasthe outcome criterion, and group and sex as fixed factors to test for interaction effects. **Results:** Overall, patients obtained lower scores in the cognitive, emotional reactivity and social skills domains of empathy ($p < 0.001$). No differences between men and women were found and no interaction effect was identified between sex and group (schizophrenia vs. control) ($p > 0.05$). **Conclusion:** This study adds to the evidence on differ ences in social cognition between people with and without a mental illness such as schizophrenia. It also identifies the absence of sex differences between men and women, observed in both the group of patients and control subjects, which warrants further exploration.
Palabras claves	Schizophrenia; sex; empathy; social cognition

Revista	**UNIVERSE**
ISSN	eISSN: 2218-1997
DOI	https://doi.org/10.3390/universe10090351
Título del Artículo	On the Classical Limit of Freely Falling Quantum Particles, Quantum Corrections and the Emergence of the Equivalence Principle
Autores e instituciones de adscripción	Juan A. Cañas [1]; J. Bernal [2]; A. Martín Ruiz [1] [1] Instituto de Ciencias Nucleares, Universidad Nacional Autónoma de México, Ciudad de México 04510, Coyoacán, Mexico [2] División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Cunduacán 86690, Tabasco, Mexico

Resumen	Quantum and classical mechanics are fundamentally different theories, but the correspondence principle states that quantum particles behave classically in the appropriate limit. For high-energy periodic quantum systems, the emergence of the classical description should be understood in a distributional sense, i.e., the quantum probability density approaches the classical distribution when the former is coarse-grained. Following a simple reformulation of this limit in the Fourier space, in this paper, we investigate the macroscopic behavior of freely falling quantum particles. To illustrate how the method works and to fix some ideas, we first successfully apply it to the case of a particle in a box. Next, we show that, for a particle bouncing under the gravity field, in the limit of a high quantum number, the leading term of the quantum distribution corresponds to the exact classical distribution plus sub-leading corrections, which we interpret as quantum corrections at the macroscopic level.
Palabras claves	Classical limit; quantum bouncer; universality of free fall

Revista	**REVISTA DE ESTUDIOS LATINOAMERICANOS SOBRE REDUCCIÓN DEL RIESGO DE DESASTRES**
ISSN	0719-8477
DOI	https://doi.org/10.55467/reder.v8i2.165
Título del Artículo	Riesgo Operativo de un Programa Interno de Protección Civil: el Caso de una Institución Pública Mexicana de Enseñanza Superior
Autores e instituciones de adscripción	Grisel Guadalupe Damián Romero [1]; Yesenia Peralta Jiménez [1]; José Alfredo de la Cruz Narváez [1]; María Antonia Jiménez Santos [1]; Lucía Velázquez Velázquez [1] [1] División Académica Multidisciplinaria de Comalcalco (DAMC), Universidad Juárez Autónoma de Tabasco (UJAT), Villahermosa, México
Resumen	El objetivo de este trabajo fue analizar la operatividad de un Programa Interno de Protección Civil en una institución pública de educación superior de Tabasco, México, con un enfoque de gestión integral de riesgos basado en el riesgo operativo. Se trata de una investigación cualitativa basada en un estudio de caso con un diseño de investigación exploratorio y descriptivo. La recolección de información se realizó a través de entrevistas en la unidad interna de protección civil y observaciones del funcionamiento del programa a través de cédulas de riesgo. Se realizó un análisis FODA con la información recabada. Se determinó la vulnerabilidad interna y externa para construir una matriz de riesgos donde la vulnerabilidad interna es un riesgo crítico inaceptable y la vulnerabilidad externa son riesgos menores. Se sugiere desarrollar planes detallados para abordar los riesgos más críticos y planes generales para aquellos con un riesgo marginal. Se identificó que las situaciones críticas de riesgo están relacionadas con sus actividades y operaciones.
Palabras claves	Riesgo operativo; Gestión integral de riesgo; FODA; Programa interno de protección civil; Vulnerabilidad; México

Revista	**FISHES**
ISSN	eISSN: 2410-3888
DOI	https://doi.org/10.3390/fishes9070261
Título del Artículo	Optimization of Classical Lipase Activity Assays for Fish Digestive Tract Samples
Autores e instituciones de adscripción	Héctor Nolasco Soria [1]; Carlos Alfonso Alvarez González [2]; Dariel Tovar Ramírez [1]; Jorge González Bacerio [3]; Alberto del Monte Martínez [3]; Fernando Vega Villasante [4] [1] Laboratorio de Fisiología Comparada y Genómica Funcional, Programa de Acuicultura, Centro de Investigaciones Biológicas del Noroeste, S.C. Av. IPN # 195, Col. Playa Palo de Santa Rita Sur, La Paz 23090, Baja California Sur, Mexico [2] Laboratorio de Fisiología en Recursos Acuáticos, División Académica en Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Carr. Vhsa-Cárdenas Km 0.5 Entronque Bosque de Saloya, Villahermosa 86039, Tabasco, Mexico [3] Facultad de Biología, Universidad de la Habana, Calle 25 Entre J e I, # 455, Vedado, Plaza de la Revolución, La Habana 10400, Cuba [4] Laboratorio de Calidad de Agua y Acuicultura Experimental, Centro Universitario de la Costa, Universidad de Guadalajara, Del. Ixtapa, Puerto Vallarta 48280, Jalisco, Mexico
Resumen	Fish possess lipases from embryonic development to adulthood. Lipase activity methods vary and significantly differ in terms of the concentration of the substrate used, bile salt,

Resumen	Ca^{2+}, temperature, pH, and type of lipase units, which limits comparative studies. The three most-used substrates are *p*-nitrophenyl (*p*-NP), β-naphthyl (β-N) derivates, and emulsified natural oils. These were selected to be redesigned in this study to measure lipase activity under temperature, pH, ion, and bile salt conditions closer to fish physiology, using the appropriate molar absorption coefficient to calculate the lipase units. *Cynoscion parvipinnis* (CP), *Seriola rivoliana* (SR), *Centropomus viridis* (CV), *Elop affinis* (EA), and *Canthidermis maculate* (CM) pyloric caeca-intestine extracts were studied. Sodium taurocholate showed the highest activity for intestinal lipases, and the fatty acid length in the substrates changed the lipase hydrolysis rate. The highest lipase activity was obtained with *p*-NP butyrate and *p*-NP caprylate in four fish species. Lipase activity was highly activated with Ca^{2+} (4–7 mM). The β-N absorption spectrum indicates a plateau between 534 and 554 nm for fish lipases. Salmon oil was identified as the most digestible lipid in the four fish species using the *in vitro* digestibility assay. The lipase zymogram showed an apparent size of 46.3 kDa for CP, 40.2 kDa for SR, 46.2 kDa for CM, 106.6 kDa for EA, and 58.3, 84.6, and 162.1 kDa for CV.
Palabras claves	Fish; pyloric caeca-intestine; lipase; enzyme unit; optimization

Revista	**GEOSCIENCES SWITZERLAND**
ISSN	eISSN: 2076-3263
DOI	https://doi.org/10.3390/geosciences14020032
Título del Artículo	Optimization of Structural Design in Steel Buildings Based on the Site-Specific Design Spectra of the Mexico Seismic Regulations
Autores e instituciones de adscripción	Juan Antonio Ramos Sánchez [1,2]; Sergio A. Díaz [1]; René Sebastián Mora Ortiz [1]; Gabriel Polanco Sotomayor [2]; Francisco Magaña Hernández [1] [1] División Académica de Ingeniería y Arquitectura, Universidad Juárez Autónoma de Tabasco, Villahermosa 86040, Tabasco, Mexico [2] Facultad de Ingeniería Anáhuac Mayab, Campus Mérida, Merida 97308, Yucatán, Mexico
Resumen	Seismic risk management in urban areas requires accurate prediction of the expected seismic hazard. The seismic design standards in the world provide the seismic design spectra (DS). These are crucial for estimating seismic forces on a structure, are typically derived from theoretical models in deterministic or probabilistic seismic hazard studies, especially for bedrock soils. Characterizing soil dynamic amplification frequencies or periods is necessary to establish site-specific design spectra (DS_{site}). Geotechnical and geophysical studies, along with environmental vibration records, determine soil stratigraphy characteristic features and their dominant frequency or period. These parameters improve our understanding of seismic wave behavior from bedrock to surface soil during earthquakes. This article details the utilization of geotechnical, geophysical studies, and environmental vibration records to estimate DS_{site} in accordance with Mexican seismic regulation and examines the cost–benefit aspects of using the Ds_{site} in optimizing the structural design of a medium-rise steel building in southeastern Mexico, characterized by soft soil and a moderate seismic hazard. The case study demonstrates an 18% cost savings in the structural elements of the building by employing the DS_{site} with more rational spectral ordinates for study site.
Palabras claves	Seismic hazard; dynamic soil properties; geotechnics; geophysics; environmental vibration records; site effect; steel buildings

Revista	**DYNA COLOMBIA**
ISSN	0012-7353
DOI	https://doi.org/10.15446/dyna.v91n233.113840
Título del Artículo	Optimization of the refined used lubricating oil/diesel mixture to incorporate it into drilling fluids
Autores e instituciones de adscripción	José Abisenas Alvarez Rivera [1]; Guillermo Castañón Nájera [1] [1] Academic Division of Biological Sciences, Juarez Autonomous University of Tabasco, Mexico

Resumen	The use of refined used lubricating oils (RULO) is an opportunity for use for the industrial sector, improving the environment. The objective of the research was to evaluate different RULO/diesel mixtures from the AT80 and AT40C1 treatments. The experiment consisted of applying different proportions of RULO, forming five different mixtures between ALUR/ diesel. The mixes were 85/15, 70/30, 55/45, 40/60 and 30/70. The results showed that the best mixtures were M4 and M5 of the AT80 treatment, with average density of 0.80 g/cm3, viscosity of 5.83 cP, electrical stability of 1694.33 V, flash point of 95°C and 96.67% oil. With these results, a new alternative and use is created, reducing diesel and economic costs for the oil industry that prepares oil-based drilling fluids.
Palabras claves	Drilling fluids; refining; rheology; reuse; used oil

Revista	**SOUTHWESTERN ENTOMOLOGIST**
ISSN	1081-1710
DOI	https://doi.org/10.3958/059.049.0122
Título del Artículo	Parasitism of *Opsiphanes fabricii fabricii* (Boisduval *Pupae*) by *Conura maculata* (Fabricius) and *C. immaculata Cresson* at Oil Palm Plantations
Autores e instituciones de adscripción	José Isaac Figueroa [1]; Rodolfo Osorio Osorio [2]; Ocarl Joseph [2]; Jorge Valdez Carrasco, Karen Z. Ruíz Jiménez [2]; Luis U. Hernández Hernández [2]; Efraín de la Cruz Lázaro [2]; Cesar Márquez Quiroz [2] [1] Instituto de Investigaciones Agropecuarias y Forestales, Universidad Michoacana de San Nicolás de Hidalgo. Km. 9.5 Carr. Morelia-Zinapécuaro. 58880 Tarímbaro, Michoacán, México. [2] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco. Km. 25 Carr. Villahermosa-Teapa. Centro, Tabasco, México.
Resumen	Split-banded owl-butterfly, *Opsiphanes fabricii fabricii* (Boisduval 1870) (*Lepidoptera: Nymphalidae: Satyrinae*), is found in tropical and subtropical areas of Mexico and Central America. Larvae of the species feed on leaflets of oil palm, *Elaeis guineensis* Jacq. (Arecaceae). *Conura maculata* (Fabricius) and *Conura immaculata* (Cresson) were parasitoids of *O. fabricii fabricii pupae* at two oil palm plantations at Tabasco, Mexico. These new records broaden the host range and geographic distribution of both parasitoids in the Neotropical region. Parasitism rates by *C. maculata* ranged from 18.2% (Ejido Montaña, Jalapa) to 55.1% (Ejido Ceiba, Tacotalpa). The number of *pupae* collected from *O. fabricii fabricii* were significantly correlated with the number of *pupae* parasitized by *C. maculata* (Ejido Ceiba: r = 0.91; Ejido Montaña: r = 0.87). Parasitism rates of by C. immaculata ranged from 0% (Ejido Montaña) to 6.8% (Ejido Ceiba). We believe parasitic activity by both Conura spp. contribute to maintaining relatively low abundance of *O. fabricii fabricii*. Factors that promote parasitic activity at oil palm plantations and need for more knowledge of trophic interactions of defoliating insects, parasitoids, and hyperparasitoids in the oil palm agroecosystem of the region are discussed.
Palabras claves	Mexico; Parasitism; Plantations; *Pupae*; *Nymphalidae*; *Lepidoptera*; Palms; Insects

Revista	**SOUTHWESTERN ENTOMOLOGIST**
ISSN	1948-7134
DOI	https://doi.org/10.3958/059.049.0212
Título del Artículo	Parasitism of Snakes by *Amblyomma dissimile* in Tabasco, Mexico.
Autores e instituciones de adscripción	Cinthia C. Morán Núñez [1]; Luis F. Ramírez Castro [1]; Roger I. Rodríguez Vivas [2]; Coral J. Pacheco Figueroa [3]; Joel Alcántara León [4]; Enrique Reyes Novelo [5]; Nadia F. Ojeda Robertos [1] [1] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco. Km 25 Carretera Villahermosa-Teapa Ra. La Huasteca 2a sección. 86298, Centro, Tabasco, México. [2] Universidad Autónoma de Yucatán. Facultad de Medicina Veterinaria y Zootecnia. 97315. Mérida, Yucatán, México. [3] División Académica de Ciencias Biológicas. Universidad Juárez Autónoma de Tabasco. 86150, Centro, Tabasco, México. [4] Centro de interpretación de la Naturaleza. Yumká. Carretera Barrancas y Guanal, López Portillo s/n. 86275. Villahermosa, Tabasco, México. [5] Centro de Investigaciones Regionales “Dr Hideyo Noguchi”. Universidad Autónoma de Yucatán. 97700. Mérida, Yucatán, México.

Resumen	This study documents the prevalence, mean intensity, mean abundance, aggregation, and seasonal variation of *Amblyomma dissimile* Koch in free-living snakes in the tropical humid climate of the Centro municipality of Tabasco, Mexico. A total of 19 snakes of seven species were captured manually during trail walks by trained personnel and carefully inspected for ticks. A morphological characterization identified the ticks as *A. dissimile*. Estimates indicated that 52.6% of the snakes had been parasitized by this tick. A total of 213 ticks were collected. The mean abundance was 11.2 (95% CI= 4-36), and the mean intensity was 21.3 (95% CI=8-57.1). Adult ticks were the most abundant, followed by nymphs and larvae. The most common parasitized body area was the first third of the snake's body, followed by the second, third, and finally, the head. Half of the inspected snakes were parasitized, and the ticks were found most frequently in the atlantooccipital joint area at the entrance to the stomach. There were high parasitic indices, abundances, and intensities, and *Boa imperator* Daudin was the most parasitized snake. More parasitized snakes were observed during the dry season. The study compiles relevant information about the presence of *A. dissimile* and their host snakes in Tabasco, Mexico.
Palabras claves	Mexico; *Amblyomma*; Atlanto-Occipital Joint; Snakes; Parasitism; Ticks; Tropical Climate

Revista	**ENFERMERÍA GLOBAL**
ISSN	1695-6141
DOI	https://doi.org/10.6018/eglobal.575661
Título del Artículo	Perceived Stress and Alcohol Consumption in Indigenous
Autores e instituciones de adscripción	Jasmín Urania Camacho Martínez [1]; Matilde del Carmen Fría De la Cruz [1]; Karla Selene López García [2]; José Roberto García Jiménez [1]; Pedro González Angulo [1]; José Juan López Cocotle [1] [1] Juárez Autonomous University of Tabasco, Multidisciplinary Academic Division of Jalpa de Méndez. Mexico. [2] Autonomous University of Nuevo León, Faculty of Nursing. Mexico.
Resumen	**Introduction:** In Latin America, alcoholic beverages consumption is a main reason of problems related to physical, mental and social health. The National Commission for the Development of Indigenous Peoples states that indigenous populations are vulnerable problems related to alcohol consumption because a set of characteristics such as extreme poverty and educational backwardness. Our objective was to determine the effect of perceived stress on alcohol consumption in an indigenous population. **Method:** Study design was descriptive, correlational, and predictive. **Results:** Perceived stress was positively and significantly related to the number of drinks consumed in a typical day (rs = .211, p ‹.01), it's also related with alcohol consumption (AUDIT) (rs = .328, p ‹ .01), however, it was negatively and significantly related to age (rs = -.135, p ‹.05). The final Model presented a significant effect in the whole model (F (1,110) = 20.126, p = .001), explaining 39.3% of the variance of alcohol consumption. Perceived stress was found to have a positive and significant effect on alcohol consumption (B =.229, p ‹ .001). **Conclusions:** Perceived stress is a factor influencing excessive alcohol consumption in indigenous populations, drug use is considered a coping strategy to deal with stressful problems in daily life. The population presented problems with heavy episodic drinking, past year drinking with high prevalence and harmful drinking.
Palabras claves	Physiological Stress; Psychological Stress; Indigenous Culture; Alcohol Drinking; Alcohol Drinking Habits.

Revista	**COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY PART B: BIOCHEMISTRY AND MOLECULAR BIOLOGY**
ISSN	1879-1107
DOI	https://doi.org/10.1016/j.cbpb.2023.110881
Título del Artículo	pH evaluation in the digestive tract of the pygmy octopus, *Paractopus digueti*

Autores e instituciones de adscripción	N. Perales García [1]; D. Tovar Ramírez [1]; M.G. Martínez Morales [2]; B.P. Ceballos Vázquez [2]; D.A. Corona Rojas [1]; M.A. Salcedo Meza [3]; A. Garrido Mora [3]; F. Vega Villasante [4]; H. Nolasco Soria [1] [1] Centro de Investigaciones Biológicas del Noroeste, S.C. Av. IPN # 195, Col. Playa Palo de Santa Rita Sur, 23096 La Paz, Baja California Sur, Mexico [2] Instituto Politécnico Nacional, Centro Interdisciplinario de Ciencias Marinas, Av. IPN s/n, Col. Playa Palo de Santa Rita, 23096 La Paz, Baja California Sur, Mexico [3] Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, Mexico [4] Universidad de Guadalajara, CUCOSTA, Puerto Vallarta, Mexico
Resumen	This study is considered the first report on the digestive tract pH of the pygmy octopus (*Paroctopus digueti*). Adult octopuses obtained from the wild (mean ± SD) (42.1 ± 15.1 g), and those acclimated to captivity in a fed (25.4 ± 9.0 g, n = 15) or fasted (23.1 ± 6.1 g, n = 15) state, were studied. The digestive tract regions of buccal mass (BMA), anterior salivary glands (ASG), posterior salivary glands (PSG), crop (CRO), stomach (STO), caecum (CAE), digestive gland (DGL) and intestine (INT) were dissected. The pH of the internal part of the digestive tract regions was measured. Food intake (dry weight) per octopus was 53.8 ± 35.1 mg to 214.9 ± 157.6 mg at 15 min and 8 h, respectively. The apparent food transit time was approximately 8 h for the appearance of feces in the posterior intestine. In all cases, the pH of the digestive tract regions was lower than pH 7.0. No statistical difference was found when comparing the pH by digestive tract regions between wild octopuses and octopuses in captivity (fasting and feeding). In acclimatized octopuses, the average pH was 6.41 ± 0.22 and 6.41 ± 0.23 for fasting and fed octopuses, respectively. Although DGL had the lowest pH values relative to other digestive tract tissues ($p < 0.05$), pH was always >5.0 (6.04 ± 0.12 in the wild and 5.97 ± 0.17 in feeding octopuses). In conclusion, the pygmy octopus has an acidic pH in its digestive tract under fasting and feeding conditions.
Palabras claves	Digestive tract; Digestive transit; Lumen pH; Octopus; *Paroctopus digueti*.

Revista	**REVISTA BRASILEIRA DE FARMACOGNOSIA-BRAZILIAN JOURNAL OF PHARMACOGNOSY**
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DOI	https://doi.org/10.1007/s43450-024-00541-8
Título del Artículo	Pharmacokinetic Study of Tilianin After Oral Administration in Wistar Rats by HPLC
Autores e instituciones de adscripción	Oswaldo Hernández Abreu [1]; Samuel Estrada Soto [2]; Julio César Rivera Leyva [2]; Alejandro Peregrina Lucano [3]; Gabriela Ávila Villareal [4]; Rafael Villalobos Molina [5] [1] División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Cunduacán 86690, Tabasco, Mexico [2] Facultad de Farmacia, Universidad Autónoma del Estado de Morelos, Cuernavaca 62209, Morelos, Mexico [3] Centro Universitario de Ciencias Exactas E Ingenierías, Universidad de Guadalajara, Guadalajara 44430, Jalisco, Mexico [4] Centro Nayarita de Innovación y Transferencia de Tecnología A.C., Unidad Académica de Ciencias Químico Biológicas y Farmacéuticas, Universidad Autónoma de Nayarit, Tepic 63000, Mexico [5] Unidad de Biomedicina, Facultad de Estudios Superiores Iztacala, Universidad Nacional Autónoma de México, Tlalnepantla 54090, Estado de México, Mexico
Resumen	Tilianin was obtained from the medicinal plant Agastache mexicana (Kunth) Lint & Epling, Lamiaceae, a compound that is candidate to develop new multitarget drug for the treatment of metabolic syndrome–related diseases. The main aim of this work is to determine the pharmacokinetic parameters of tilianin after oral administration in Wistar rats to clarify its absorption pattern, distribution, metabolism, excretion, and permeability. A validated sensitive, selective, and reproducible high-performance liquid chromatography method was developed: r2 = 0.9992, 5.8 min of retention time, recovery of 100.2%, and LOD and LOQ were 1.86 and 5.63 µg/ml, respectively. By non-compartmental analysis, pharmacokinetic parameters were obtained, such as Tmax (1.00 h), Cmax (29.01 µg/ml), T1/2 (3.33 h), MRT (2.91 h), AUC 0–t (62.25 µg h/ml), AUC 0–∞ (92.47 µg h/ml), Kel (0.21 1/h), and Vd/F (2,788.05 ml). It was also determined that tilianin is deposited at 5 h in the pancreas, liver, and lung. The protonated [M + H]+ ion peaks of main metabolites were obtained by LC–MS at m/z 285.1 and 625.2, corresponding to acacetin and tilianin-glucuronic acid conjugation,

Resumen	respectively. In addition, tilianin was not excreted and metabolized through urine. Tilianin had a lower permeability pattern than furosemide and naproxen using everted gut model (1.43 × 10−6 cm/s). The pharmacokinetic study showed a long-lasting terminal half-life, and rapid absorption of tilianin in rodents. These results support the search to develop tilianin as a new drug for the treatment of metabolic syndrome.
Palabras claves	Antihypertensive; HPLC; LC–MS; Pharmacokinetic; Tilianin; Wistar rats

Revista	**INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES**
ISSN	eISSN: 1422-0067
DOI	https://doi.org/10.3390/ijms251810154
Título del Artículo	Phenome-Wide Association Study of Latent Autoimmune Diabetes from a Southern Mexican Population Implicates rs7305229 with Plasmatic Anti-Glutamic Acid Decarboxylase Autoantibody GADA Levels
Autores e instituciones de adscripción	Germán Alberto Nolasco Rosales [1]; José Jaime Martínez Magaña [2,3,4]; Isela Esther Juárez Rojop [1]; Ester Rodríguez Sánchez [5]; David Ruiz Ramos [1]; Jorge Ameth Villatoro Velázquez [6]; Marycarmen Bustos Gamiño [6]; María Elena Medina Mora [6,7]; Carlos Alfonso Tovilla Zárate [8]; Juan Daniel Cruz Castillo [1]; Humberto Nicolini [9]; Alma Delia Genis Mendoza [9] [1] División Académica de Ciencias de la Salud, Universidad Juárez Autónoma de Tabasco, Villahermosa 86100, Mexico [2] Department of Psychiatry, Yale School of Medicine, Yale University, New Haven, CT 06520, USA [3] VA Connecticut Healthcare System, West Haven, CT 06516, USA [4] U.S. Department of Veterans Affairs National Center for Posttraumatic Stress Disorder, Clinical Neurosciences Division, West Haven, CT 06516, USA [5] Hospital Regional de Alta Especialidad "Dr. Gustavo A. Rovirosa Pérez", Secretaría de Salud, Villahermosa 86020, Mexico [6] Instituto Nacional de Psiquiatría Ramon de la Fuente Muñiz, Secretaría de Salud, Mexico City 14370, Mexico [7] Facultad de Psicología, Universidad Nacional Autónoma de México—UNAM, Mexico City 04510, Mexico [8] División Académica Multidisciplinaria de Comalcalco, Universidad Juárez Autónoma de Tabasco, Villahermosa 86658, Mexico [9] Laboratorio de Enfermedades Psiquiátricas, Neurodegenerativas y Adicciones, Instituto Nacional de Medicina Genómica, Secretaría de Salud, Mexico City 14610, Mexico
Resumen	Latent autoimmune diabetes in adults (LADA) is characterized by the presence of glutamate decarboxylase autoantibodies (GADA). LADA has intermediate features between type 1 diabetes and type 2 diabetes. In addition, genetic risk factors for both types of diabetes are present in LADA. Nonetheless, evidence about the genetics of LADA in non-European populations is scarce. This study aims to perform a genome-wide association study with a phenome-wide association study of LADA in a southeastern Mexican population. We included 59 patients diagnosed with LADA from a previous study and 3121 individuals without diabetes from the MxGDAR/ENCODAT database. We utilized the GENESIS package in R to perform the genome-wide association study (GWAS) of LADA and PLINK for the phenome-wide association study (PheWAS) of LADA features. Nine polymorphisms reach the nominal association level (1×10^{-5}) in the GWAS. The PheWAS showed that rs7305229 is genome-wide and associated with serum GADA levels in our sample ($p = 1.84 \times 10^{-8}$). rs7305229 is located downstream of the FAIM2 gene; previous reports associate FAIM2 variants with childhood obesity, body mass index, body adiposity measures, lymphocyte CD8+ activity, and anti-thyroid peroxidase antibodies. Our findings reveal that rs7305229 affects the GADA levels in patients with LADA from southeastern Mexico. More studies are needed to determine if this risk genotype exists in other populations with LADA.
Palabras claves	Latent autoimmune diabetes of adults; genome-wide association study; Mexico; fas apoptotic inhibitory molecule 2

Revista	**PAKISTAN JOURNAL OF BOTANY**
ISSN	0556-3321
DOI	http://dx.doi.org/10.30848/PJB2024-6(14)
Título del Artículo	Phenotypic And Genetic Variation in Cowpea (*Vigna Unguiculata*) L. Walp. Landraces Cultivated in A Traditional System of Southeastern Mexico

Autores e instituciones de adscripción	Amelio Eli Morales Morales [1]; Rubén Humberto Andueza Noh [2]; Carlos Juan Alvarado López [2]; Julia Medrano Macías [3]; José María Tun Suarez [1]; César Márquez Quiroz [4]; Francisco Alberto Chí Sánchez [1] [1] Tecnológico Nacional de México Campus Conkal. Conkal 97345, Yucatán, México [2] CONACYT – Tecnológico Nacional de México Campus Conkal. Conkal 97345, Yucatán, México [3] Departamento de Horticultura, Universidad Autónoma Agraria Antonio Narro, Saltillo 25315, Coahuila, Mexico [4] División Academica de Ciencias Agropecuarias. Universidad Juarez Autonoma de Tabasco. Centro 86280, Tabasco, México
Resumen	Cowpea (*Vigna unguiculata* (L.) Walp.) is an economically important crop due to its nutritional and environmental benefits. In Mexico, farmers in marginal conditions produce most of the crops using landraces classified and informally named based on the physical characteristics of the seed and the growth habit of the plant. The analysis of genetic diversity is a crucial step towards enhancing crop productivity and is accomplished by measuring variation in phenotypic and genotypic traits using morphological and molecular markers. In order to obtain valuable information for cowpea management and conservation, this study assessed the genetic variability and relationships among 14 landraces cultivated in the Yucatan Peninsula, Mexico, based on morphological traits and molecular markers (ISSR). The results contribute to our knowledge of genetic diversity in cultivated landraces of cowpea in the Yucatan Peninsula, including the first report of landraces collected in a previously unexplored region. The results indicated a higher level of diversity among varieties than within varieties. Additionally, most morphological characteristics of cowpea genotypes were very similar. The populations studied were grouped into two main clusters by a PCA based on both ancestry analysis and a dendrogram. The analysis indicated a low level of gene flow between groups.
Palabras claves	Diversity, Genetic markers, Landraces, Milpa system, Phenotypic characterization.

Revista	**INTERNATIONAL JOURNAL OF HYDROGEN ENERGY**
ISSN	1879-3487
DOI	https://doi.org/10.1016/j.ijhydene.2024.07.059
Título del Artículo	Photocatalytic hydrogen evolution on tubular shape cellulose acetate/ crystalline nanocellulose/polyvinyl alcohol membranes with embedded nanocrystalline catalysts
Autores e instituciones de adscripción	P. García Ramírez [1]; L.A. Diaz Torres [1]; S.J. Castañeda Palafox [1]; M. Villagómez Mora [1]; E. Ávalos Marrón [1,2]; R. López González [3] [1] Laboratorio de Fotocatálisis y Fotosíntesis Artificial, Grupo de Espectroscopía de Materiales Avanzados y Nanoestructurados, Centro de Investigaciones en Óptica, A.C., Lomas del Bosque 115, Lomas del Campestre, León, 37150, Guanajuato, Mexico [2] Centro Universitario de los Lagos, Universidad de Guadalajara, Enrique Díaz de León, 47463, Lagos de Moreno, Jalisco, Mexico [3] Laboratorio de Nanotecnología, División Académica de Ingeniería y Arquitectura, Universidad Juárez Autónoma de Tabasco, Av. Universidad S/N, Col. Magisterial, C.P. 86040, Villahermosa, Tabasco, Mexico
Resumen	In this work, we design an efficient and cost-effective porous membrane composed by polymeric blend that supports different photocatalytic materials. The thin (300 μm) porous photocatalytic membrane has a tubular shape and was flexible for easy handle in the reactor. The membrane is composed of a polymeric blend based on cellulose acetate, crystalline nanocellulose and polyvinyl alcohol, obtained by the phase inversion method, using cold water as non-solvent. Bismuthates ($KBiO_3$, $NaBiO_3$) and aluminates ($ZnAl_2O_4$ and $Cu_{0.9}Zn_{0.1}Al_2O_4$) powders were synthesized by diverse methodologies and were embedded into polymeric matrix. The hydrogen evolution performance of photocatalyst powders and photocatalytic composite membranes, under UV light irradiation during 180 min, were compared. The best result of hydrogen evolution was obtained by $Cu_{0.9}Zn_{0.1}Al_2O_4$ powders reaching 117.74 $\mu molg^{-1}h^{-1}$ and the M−CuZn membrane reaching 90.07 $\mu molg^{-1}h^{-1}$. The obtained results show the high potential of these polymeric membranes as a green alternative support for photocatalysts for hydrogen evolution.
Palabras claves	Hydrogen evolution; Photocatalysis; Polymeric membrane; Bismuthates; Aluminates

Revista	**JOURNAL OF CHEMICAL TECHNOLOGY AND BIOTECHNOLOGY**
ISSN	0268-2575
DOI	https://doi.org/10.1002/jctb.7624
Título del Artículo	Photocatalytic performance of Nd/TiO_2 and Nb/TiO_2 nanomaterials in the degradation of p-cresol at room temperature
Autores e instituciones de adscripción	Jesús Eduardo de la Cruz de los Santos [1]; David Salvador García Zaleta [1]; Cecilia Encarnación Gómez [1]; Zurisadai Martínez Corona [2]; Rosendo López González [2]; Mayra Angélica Álvarez Lemus [2]; Carlos Mario Morales Bautista [3]; D. Palma Ramírez [4]; Armando Reyes Montero [5] [1] División Académica Multidisciplinaria de Jalpa de Méndez (UJAT-DAMJM), Universidad Juárez Autónoma de Tabasco, Jalpa de Méndez, México [2] División Académica de Ingeniería y Arquitectura (UJAT-DAIA), Universidad Juárez Autónoma de Tabasco, Cunduacán, México [3] División Académica de Ciencias Básicas (UJAT-DACB), Universidad Juárez Autónoma de Tabasco, Cunduacán, México [4] Instituto Politécnico Nacional, Unidad Profesional Interdisciplinaria de Ingeniería Campus Hidalgo (IPN-UPIIH), Santiago Tlapacoya, México [5] Instituto de Investigaciones en Materiales (UNAM-IIM), Universidad Nacional Autónoma de México, CDMX, México
Resumen	**Background** The degradation of organic pollutants, such as p-cresol, is a challenge for natural mechanisms, and semiconductors are useful as photocatalysts to restore water quality. This work investigated the effects of neodymium (Nd) and niobium (Nb) doping on the structural and photocatalytic properties of titania (TiO_2) under ultraviolet (UV) irradiation. **Results** X-ray diffraction (XRD) results displayed the formation of anatase, TiO2(B) and rutile phases on the Nd/TiO_2 and Nb/TiO_2 compounds. The Rietveld analysis estimated the composition of phases, as well as the crystal size for each crystalline phase in the samples (<43 nm). The crystal sizes and morphology of the powders were observed using transmission electron microscopy (TEM) and scanning electron microscopy (SEM). Energy dispersive spectroscopy (EDS) and X-ray spectroscopy (XPS) analysis confirmed the presence of Nd and Nb dopants in the TiO_2-based photocatalysts. Nitrogen adsorption/desorption isotherms results revealed pore sizes between 5 and 11 nm, as well as surface area values up to ~81 $m^2 g^{-1}$. The diverse compounds showed excellent removal efficiency of p-cresol under UV light (10–30% faster than commercial TiO_2-P25). **Conclusions** This synthesis method favored the incorporation of Nd and Nb dopants in the TiO2 structure. Nd/TiO_2 specimens showed higher photocatalytic response than Nb/TiO_2 samples, possibly as a result of the synergic effects between phases [anatase and TiO_2(B)], higher surface area values (≤ ~80.47 $m^2 g^{-1}$), as well as the nature of dopant. Photocatalysts with better photocatalytic performance demonstrated good degradation rate after 20 h. © 2024 Society of Chemical Industry (SCI).
Palabras claves	Nd/TiO2; Nb/TiO 2; p-cresol degradation; TiO_2 (B); photocatalysts

Revista	**JOURNAL OF MATERIALS SCIENCE: MATERIALS IN ELECTRONICS**
ISSN	1573-482X
DOI	https://doi.org/10.1007/s10854-024-12509-4
Título del Artículo	Photoreduction of 4-nitrophenol and Cr VI using ZnS/ZnO-tubes synthesized with hexamethylenediamine
Autores e instituciones de adscripción	Dora María Frías Márquez [1]; Williams Eduardo Sánchez Rivera [1]; Obdulia Medina Juarez [2]; Ruth Lezama García [1]; Getsemani Morales Mendoza [1]; Cinthia García Mendoza [1] [1] Laboratorio de Nanotecnología, División Académica de Ingeniería y Arquitectura, Universidad Juárez Autónoma de Tabasco, Tabasco, Mexico [2] Centro de Investigación en Nanociencias y Nanotecnología de CUValles, Universidad de Guadalajara, 46600, Guadalajara, Jalisco, México
Resumen	The presence of toxic substances constitutes an environmental problem and even affects health. To evaluate the photoreduction of 4-nitrophenol (4-NF) and Cr(VI), both highly polluting substances, two Zn materials synthesized by the precipitation method; ZnS (Zinc Sulfide) and ZnS/ZnO-tubes (Zinc Sulfide deposited on Zinc Oxide tubes) have been used. The ZnS/ZnO-tubes assisted photoreduction of 4-NP to 4-aminophenol (4-AP) exhibits pseudo-first order kinetics with a rate constant of 0.1476 min^{-1} and a yield of 90% at 15 min, while the ZnS material exhibits zero-order kinetics with a rate constant of 0.07859 mg/L*min and a reducing yield of 30% at 15 min. However, for the Cr(VI) to Cr(III) photoreduction reaction they exhibit pseudo-second-order kinetics with a rate constant of 2.711 L/mg*min accompanied by a 90% reducing yield at 15 min in the presence of ZnS/ZnO tubes, and

Resumen	pseudo-zero-order kinetics with a rate constant of 0.518 mg/L*min and a 30% reducing yield at 15 min for the ZnS material. In both cases, the hybrid ZnS/ZnO-tubes material exhibits exceptional catalytic performance. The photocatalytic efficiency of the ZnS/ZnO-tubes material is cooperatively attributed to its morphological and chemical properties. The average particle size of ZnS/ZnO-tubes is 150 nm, while that of ZnS particles is 450 nm.
Palabras claves	N/A

Revista	**BIOAGRO**
ISSN	2521-9693
DOI	https://doi.org/10.51372/bioagro362.9
Título del Artículo	Physical and chemical characterization of organic wastes with potential use as components of horticultural substrates
Autores e instituciones de adscripción	Maximiano A. Estrada Botello [1]; Salomé Gayosso Rodríguez [1]; Carlos A. Pérez Cabrera [2]; Eduardo Villanueva Couoh [3] [1] División Académica de Ciencias Agropecuarias de la Universidad Juárez Autónoma de Tabasco (DACA-UJAT), Tabasco, México. [2] Colegio Superior Agropecuario del Estado de Guerrero. Iguala de la Independencia, Guerrero, México. [3] Instituto Tecnológico de Conkal. Conkal, Yucatán, México.
Resumen	In recent decades, interest has been generated in integrating agro-industrial and harvest residues into agricultural production in intensive production systems, to reduce environmental impact and production costs. Therefore, the objective of this research was to chemically and physically characterize some locally available agro-industrial and vegetable residues to know their potential use as components of agricultural substrates. Chemical and physical properties of organic materials were characterized: pH and EC, granulometry, average particle diameter, bulk density (Bd), total porosity (Tp), aeration porosity (Ap), water retention porosity (Wp), and moisture retention curves were determined. The pH of the analyzed materials ranged from 5.1 to 10.44, the CE was lower than 2 $dS \cdot m^{-1}$ except for the water lily and banana rachis fiber. The granulometry of the materials had more than 25 % of particles smaller than 0,85 mm; however, the teak shavings and the husk of the oil palm fruit had a Pd with 5.67 mm and 3.21 mm, respectively, which increased their aeration capacity. Pine sawdust and cocoa fruit husk had values higher than the control in Bd, Tp, Ap, Wp and total available water. In conclusion, the materials have different aeration and moisture retention characteristics, and they can be combined in different proportions according to their physical and hydrophysical characteristics and generate a balance in the water-air relationship.
Palabras claves	Agro-industrial oil palm residues, banana rachis, cocoa husk, water lily, wood sawdust

Revista	**FERMENTATION**
ISSN	eISSN: 2311-5637
DOI	https://doi.org/10.3390/fermentation10080405
Título del Artículo	Physicochemical and Biochemical Changes in Cocoa during the Fermentation Step
Autores e instituciones de adscripción	Franco Lucio Ruiz Santiago [1,2]; Facundo Joaquín Márquez Rocha [3]; Pedro García Alamilla [4]; Areli Carrera Lanestosa [4]; Carolina Ramírez López [1]; Erik Ocaranza Sánchez [1]; David Jesús Jiménez Rodríguez [5] [1] Instituto Politécnico Nacional, Centro de Investigación en Biotecnología Aplicada, Ex-Hacienda San Juan Molino, Carr. Estatal Santa Inés Tecuexcomac-Tepetitla, Santa Inés Tecuexcomac CP 90700, Tlaxcala, Mexico [2] División de Procesos Industriales, Universidad Tecnológica de Tabasco, Carr. Villahermosa-Teapa km 14.6, Parrilla II, Centro CP 86288, Tabasco, Mexico [3] Unidad Profesional Interdisciplinaria de Ingeniería Campus Hidalgo, Instituto Politécnico Nacional Distrito de Educación, Salud, Ciencia, Tecnología e Innovación, San Agustín Tlaxiaca CP 42162, Hidalgo, Mexico [4] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Carr. Villahermosa-Teapa km 25 Ranchería La Huasteca, Centro CP 86298, Tabasco, Mexico [5] Centro Mexicano Para la Producción más Limpia, Unidad Tabasco, Instituto Politécnico Nacional, Cunduacán CP 86691, Tabasco, Mexico
Resumen	The physicochemical and biochemical changes during the fermentation of four clones and two native varieties of *Theobroma cacao* L. were studied. Fermentation was performed in traditional wood cubes. During fermentation, the cotyledon pH decreased, and the

Resumen	temperature increased to more than 10 °C above the ambient temperature (47 °C). The fermentation index (FI) increased in the clones C1, C4, C8, C9, and Guayaquil (G) to close to one at 120 h of fermentation. For the FI of the cocoa Criollo (Cr), a value of 2.5 was proposed according to the spectrophotometric scan performance. The total polyphenol content increased in all the samples from 21 (C8) to 70 (Cr) % in a comparison of the TPC at T0 and T120, respectively. The total flavonoid content increased from 16 (C8) to 51% in Guayaquil (G) during the fermentation period. In the case of the methylxanthines, such as theobromine and caffeine, both quantities decreased. The theobromine content decreased in all the samples from 6 (G) to 31% (C8). The caffeine content decreased in all the samples from 3% in Cr to 25% in C1 and G after fermentation. The antioxidant capability did not change after 120 h of fermentation, and the amount of methylxanthines did not affect the antioxidant potential of the fermented cocoa. The FTIR scan of the fat-free cocoa showed significant differences between the unfermented and fermented beans, and several peaks assigned to carbohydrates and proteins decreased.
Palabras claves	*Theobroma cacao*; fermentation; polyphenols; methylxanthines; antioxidants; FTIR scanning

Revista	**AUSTRALIAN JOURNAL OF CROP SCIENCE**
ISSN	1835-2707
DOI	https://doi.org/10.21475/ajcs.24.18.04.PNE-14
Título del Artículo	Phytosociology in degraded areas using different pasture recovery methods in a semiarid region of Brazil
Autores e instituciones de adscripción	Raquel Vieira Rodrigues de Souza [1]; Ricardo Loiola Edvan [2]; Leílson Rocha Bezerra [3]; Marcos Jácome de Araújo [1]; Larissa de Oliveira Fontes [1]; Tairon Pannunzio Dias Silva [1]; Antonio Leandro Chaves Gurgel [1]; Alfonso Juventino Chay Canul [3]; Ana Beatriz de Almeida Duarte [1]; Luís Carlos Vinhas Ítavo [5]; Gelson dos Santos Difante [5] [1] Campus Professora Cinobelina Elvas, Universidade Federal do Piauí, Teresina/PI, Brasil [2] Centro de Ciências Agrarias, Universidade Federal do Piauí, Teresina/PI, Brasil [3] Centro de Saúde e Tecnologia Rural, Universidade Federal de Campina Grande, Patos/PB, Brasil [4] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Tabasco, México
Resumen	Pasture degradation poses a major challenge for cattle farmers. Phytosociological surveys help identify the botanical composition of an area, aiding in assessing pasture degradation stages. This study aimed to assess the phytosociology of degraded areas undergoing various pasture recovery methods in the sandy soil of Brazil's semi-arid region. The experimental design was in randomized blocks, with plots split in time, totaling 16 experimental plots. The experiment involved four recovery methods: closed pasture (CP), which was a pasture without any human intervention and represented the control treatment; weed control (WC) to prevent interference from weeds; fertilization (FE), which involved applying chemical fertilizers to the degraded area; and weed control + fertilization (WC + FE), with the subplots divided into two evaluation periods. The evalauted area, implemented in December 2010, contained the cultivars Marandu, MG5, MG4 (*Brachiaria brizantha*), Mombaça (*Panicum maximum*), and Planaltina (*Andropogon gayanus*), with signs of degradation verified as of January 2014. Four areas measuring 200 m^2 each were determined split into four equal areas (50 m^2), one for each method (treatments). The density index (plants/$m^{2)}$, frequency, abundance, relative density (%), relative frequency (%), relative abundance (%), and importance value index were calculated. At the beginning of the application of recovery methods, 22 species of undesirable plants were detected, distributed into 17 families, with Fabaceae showing the highest number of individuals. The pastures with the cultivars Marandu, MG5, and MG4 showed the best results for area recovery under methods WC and WC + FE. The areas with the cultivars Mombaça and Andropogon showed a lower number of undesirable plants in the FE method. Therefore, the cultivar MG4, due to its growth habit, and methods WC and WC + FE, which prevent the infestation of undesirable weeds, are more efficient to recover degraded areas.
Palabras claves	Forage cultivars; phytosociological survey; undesirable plants.

Revista	**RISTI - REVISTA IBERICA DE SISTEMAS E TECNOLOGIAS DE INFORMACAO**
ISSN	1646-9895
URL	https://www.risti.xyz/issues/ristie71.pdf
Páginas	500-514
Título del Artículo	Play-based technological intervention for children with deficiencies in cognitive processes related to reading comprehension
Autores e instituciones de adscripción	Rubén Jerónimo Yedra [1]; María Alejandrina Almeida Aguilar [1]; Kristian Armando Pineda Castillo [2]; José Luis Gómez Ramos [1] [1] Universidad Juárez Autónoma de Tabasco [2] Universidad Pedagógica del Estado de Sinaloa, Culiacán, Mexico
Resumen	Understanding a text is a mental process that goes beyond a simple reading, which involves thinking, assimilating, reasoning and giving meaning to what is being reviewed. In the case of children with deficiency in the cognitive processes related to reading, they may have difficulty remembering information, following instructions and expressing their thoughts in writing, facing significant challenges in their academic and social development. The objective of this research was to develop a playful and digital technological intervention, using interactive and attractive strategies for children, in order to support and strengthen the cognitive processes, involved in the acquisition of reading skills, of those that have deficiencies in these areas. To achieve the above, a mixed research approach was used, using unstructured interviews, observation, and record review as data collection tools
Palabras claves	Reading comprehension, Technological intervention, Playful, Children, Cognitive processes.

Revista	**SMALL RUMINANT RESEARCH**
ISSN	1879-0941
DOI	https://doi.org/10.1016/j.smallrumres.2023.107183
Título del Artículo	Predicting body fat depots in Katahdin sheep using ultrasound kidney fat thickness measurements
Autores e instituciones de adscripción	Miguel Ángel Gastelum Delgado [1,2]; Rosario Salazar Cuytun [1]; Marco A. Ramírez Bautista [3]; Gamaliel Antonio Molina [1]; José Felipe Orzuna Orzuna [4]; Ricardo A. García Herrera [1]; Alfonso J. Chay Canul [1] [1] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco. Carr. Villahermosa-Teapa, km 25, CP 86280. Villahermosa, Tabasco, Mexico [2] Facultad de Agronomía, Universidad Autónoma de Sinaloa, km 17.5 Carretera Culiacán-El Dorado, Culiacán 80000, Sinaloa, Mexico [3] Tecnológico Nacional de México / Instituto Tecnológico de Chiná, Chiná, Campeche, Mexico [4] Departamento de Zootecnia, Universidad Autónoma Chapingo, Texcoco, Mexico
Resumen	The present study aimed to predict the amount and energy content of body fat depots in Katahdin sheep using ultrasound measurements of kidney fat thickness (uKFT). Twenty-four h before slaughter, the uKFT was measured behind the 13th rib on the right side of 34 animals. After slaughter, data were collected on both carcass and non-carcass components. Internal fat depots were dissected, weighed, and classified as mesenteric (MF), omental (OM), or perirenal (PF) fat and then summed to give the total internal fat (IF) weight. Carcass fat (CF: subcutaneous plus intermuscular fat), muscle, and bone weights were then obtained by manual deboning of the left half of the carcass. Total body fat (TBF) was the sum of IF and CF. Finally, the gross energy content (GE) of IF, CF, and TBF was calculated. The uKFT was moderately to highly associated with internal body fat depots ($0.63 \leq r \leq 0.83$, $P < 0.001$). In addition, r was 0.76 to 0.86 for IF and CF and had a similar range for GEIF, GECF, and GETBF. To predict internal body fat depots, the equations had an r^2 ranging from 0.43 to 0.76, and in these models, the uKFT and empty body weight (EBW) were included ($P < 0.05$). The equations for IF, CF, GEIF, GECF, and GETBF had an r^2 ranging from 0.54 to 0.78. The evaluation showed that the equations had low to moderate precision ($> 0.44 \leq$ and ≤ 0.78), moderate to high accuracy ($> 0.75 \leq$ and ≤ 0.99), and moderate to high reproducibility index (> 0.61 and ≤ 0.88). The results indicate that the equations developed from ultrasonic measurements of kidney fat thickness can be used to predict the amount and energy content of body fat depots in Katahdin sheep with moderate accuracy and precision. It also appears that Katahdin sheep store a significant proportion of absorbed energy in the carcass rather than in internal depots.
Palabras claves	N/A

Revista	**CHILEAN JOURNAL OF AGRICULTURAL AND ANIMAL SCIENCES**
ISSN	0719-3882
DOI	https://doi.org/10.29393/CHJAAS40-15PBFA80015
Título del Artículo	Predicting Body Weight Through Biometric Measurements in Bolivian Llamas
Autores e instituciones de adscripción	Flavio E. Merlo Maydana [1]; Francisco Flores López [1]; Israel Quispe Turpo [1]; Héctor A. Lee Rangel [2]; Juan Carlos Ángeles Hernández [3]; Rodrigo Portillo Salgado [4]; Mohammed Benaouda [5]; Alfonso J. Chay Canul [4]; Einar Vargas Bello Pérez [6,7] [1] Área de Ciencias Agrícolas Pecuarias y Recursos Naturales, Universidad Pública de El Alto, Bolivia. merloflavio7@gmail.com [2] Facultad de Agronomía y Veterinaria, Universidad Autónoma de San Luis Potosí, 78000, Mexico. [3] Instituto de Ciencias Agropecuarias, Universidad Autónoma del Estado de Hidalgo, Av. Universidad km. 1, Tulancingo de Bravo, 43600 Hidalgo, Mexico. [4] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco. Villahermosa, Tabasco, Mexico. [5] AgroSup Dijon, 26 Bd Dr Petitjean, 21079 Dijon, France. [6] Department of Animal Sciences, School of Agriculture, Policy and Development, University of Reading, P.O. Box 237, Earley Gate, Reading RG6 6EU, UK [7] Facultad de Zootecnia y Ecología, Universidad Autónoma de Chihuahua, Chihuahua 31453, Mexico
Resumen	The objective of this study was to evaluate the relationship between body weight (BW) and different biometric measurements in llamas (*Lama glama*) from the Bolivian highlands and to generate prediction models of BW. A total of 515 individual records of BW and biometric measurements were used. The measurements were taken on 202 males and 313 females aged between 0.5 and 5 years, and included: neck length (NL), withers height (WH), rump height (RH), heart girth (HG), body length (BL), abdomen circumference (AC), rib depth (RD), hip width (HW), pin bone width (PBW), thoracic width (TW), and back length (BKL). The relationships between BW and biometric measurements were developed using simple linear and multiple regression. For the evaluation, the relationship between the observed and predicted values of BW was determined by linear regression, the mean squared error ofprediction (MSEP) and root MSEP (RMSEP); concordance correlation coefficient analysis was also used. The BW ranged from 22 to 122 kg. Regression equations between BW, HG and RD had an r^2 of 0.94 and 0.92, respectively (RMSEP= 6.06 and 6.70 kg, respectively). The equations were highly precise (r^2 >0.86) and accurate (Cb>0.98), with a reproducibility index > 0.92. The model efficiency (MEF) indicated a higher efficiency of prediction (MEF > 0.86). Using a single predictor, HG and RD accounted for more than 92% of the variation in BW. Overall, HG may be used as a single predictor to predict BW in llamas maintained under the conditions of the Bolivian highlands.
Palabras claves	Body weight; body measurement; heart girth; mathematical models

Revista	**ANIMALS**
ISSN	eISSN: 2076-2615
DOI	https://doi.org/10.3390/ani14020293
Título del Artículo	Prediction of Body Weight by Using PCA-Supported Gradient Boosting and Random Forest Algorithms in Water Buffaloes (*Bubalus bubalis*) Reared in South-Eastern Mexico
Autores e instituciones de adscripción	Armando Gómez Vázquez [1]; Cem Tırınk [2]; Alvar Alonzo Cruz Tamayo [3]; Aldenamar Cruz Hernández [1]; Enrique Camacho Pérez [4]; İbrahim Cihangir Okuyucu [5]; Hasan Alp Şahin [6]; Dany Alejandro Dzib Cauich [7]; Ömer Gülboy [5]; Ricardo Alfonso García Herrera [1]; Alfonso J. Chay Canul [1] [1] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Villahermosa C.P. 86280, Tabasco, Mexico [2] Department of Animal Science, Faculty of Agriculture, Igdir University, TR76000 Igdir, Turkey [3] Facultad de Ciencias Agropecuarias, Universidad Autónoma de Campeche, Escárcega C.P. 24350, Campeche, Mexico [4] Facultad de Ingeniería, Universidad Autónoma de Yucatán, Av. Industrias No Contaminantes s/n, Mérida C.P. 97302, Yucatán, Mexico [5] Department of Animal Science, Faculty of Agriculture, Ondokuz Mayis University, TR55139 Samsun, Turkey [6] Research Institute of Hemp, Ondokuz Mayis University, TR55139 Samsun, Turkey [7] Tecnológico Nacional de México, Instituto Tecnológico Superior de Calkiní, Av. Ah-Canul, Calkiní C.P. 24900, Campeche, Mexico

Resumen	This study aims to use advanced machine learning techniques supported by Principal Component Analysis (PCA) to estimate body weight (BW) in buffalos raised in southeastern Mexico and compare their performance. The first stage of the current study consists of body measurements and the process of determining the most informative variables using PCA, a dimension reduction method. This process reduces the data size by eliminating the complex structure of the model and provides a faster and more effective learning process. As a second stage, two separate prediction models were developed with Gradient Boosting and Random Forest algorithms, using the principal components obtained from the data set reduced by PCA. The performances of both models were compared using R^2, RMSE and MAE metrics, and showed that the Gradient Boosting model achieved a better prediction performance with a higher R^2 value and lower error rates than the Random Forest model. In conclusion, PCA-supported modeling applications can provide more reliable results, and the Gradient Boosting algorithm is superior to Random Forest in this context. The current study demonstrates the potential use of machine learning approaches in estimating body weight in water buffalos, and will support sustainable animal husbandry by contributing to decision making processes in the field of animal science.
Palabras claves	Principal component analysis; gradient boosting; random forest; buffalo; body weight

Revista	**ARQUIVO BRASILEIRO DE MEDICINA VETERINARIA E ZOOTECNIA**
ISSN	1665-1456
DOI	https://doi.org/10.1590/1678-4162-13170
Título del Artículo	Prediction of body weight of Brown Alpine goats by measuring body volume
Autores e instituciones de adscripción	N.M. Oliveira [1]; A.L.C. Gurgel [2]; I. Fonseca [1]; J.F. Lopes [1]; G.S. Difante [3]; L.C.V. Ítavo [3]; M.J. Araújo [2]; T.P. Dias Silva [2]; A.A. Carvalho [2]; A.J. Chay Canul [4] [1] Instituto Federal de Educação Ciência e Tecnologia do Sudeste de Minas Gerais, Rio Pomba, MG, Brasil [2] Universidade Federal do Piauí, Campus Professora Cinobelina Elvas, Bom Jesus, PI, Brasil [3] Faculdade de Medicina Veterinária e Zootecnia, Universidade Federal de Mato Grosso do Sul, Campo Grande, MS, Brasil [4] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Tabasco, México
Resumen	The objective was to estimate the body weight (BW) of Brown Alpine goats by means of body volume (BV) measurements. We used 132 pieces of information with measurements of BW, body length (BL) and thoracic perimeter (TP) from 22 goats evaluated fortnightly, between March and May 2023. Based on this information, the BV of the animals was calculated. Three mathematical models were evaluated - a linear model, a quadratic model, and an exponential model - with the measurement of BV. The goodness of fit of the equations was evaluated using the coefficient of determination (R^2), mean square error (MSE) and root of the MSE (RMSE). The predictive ability of the models was evaluated by k-fold cross validation (k = 10). A high positive correlation between BW and TP (r = 0.95) and BL (r = 0.94) was observed. The correlation between BW and BV was higher than the other correlations (r = 0.98). The linear model showed the lowest values of MSE (9.49) and RMSE (3.08). In the cross-validation, the linear and quadratic models presented estimates of the mean BW and the standard deviation of this weight similar to the real data, and high R2 values (0.95) of the data predicted by the observed ones. The analysis of the coefficient of correlation and concordance (CCC) also showed that these models have accuracy and precision (CCC > 0.95). Thus, the linear and quadratic models estimate the body weight of Brown Alpine goats with precision and accuracy.
Palabras claves	Body length, Live weight, modeling, thoracic perimeter

Revista	**COATINGS**
ISSN	eISSN: 2079-6412
DOI	https://doi.org/10.3390/coatings14060693
Título del Artículo	Preparation of ZnO Thick Films Activated with UV-LED for Efficient H_2S Gas Sensing

Autores e instituciones de adscripción	Claudio Martínez Pacheco [1]; José Luis Cervantes López [1]; Antonia del Rocío López Guemez [1]; Angélica Silvestre López Rodríguez [1]; Pio Sifuentes Gallardo [1]; Juan Carlos Díaz Guillen [2]; Laura Lorena Díaz Flores [1] [1] División Académica de Ingeniería y Arquitectura, Universidad Juárez Autónoma de Tabasco, Km 1 Carretera Cunduacán-Jalpa de Méndez, Col. La Esmeralda, Cunduacán CP 86690, Tabasco, Mexico [2] Consejo Nacional de Humanidades, Ciencias y Tecnologías—Innova Bienestar de México, Ciencia y Tecnología 790, Saltillo CP 25290, Coahuila, Mexico
Resumen	In this work, ZnO thick films were synthesized via two simple and easy methods, mechanochemical synthesis and screen-printing deposition. The ZnO powders were obtained through milling at low temperature with milling times of 20, 40, and 60 min. The ZnO thick films were fabricated by depositing 10 cycles of ZnO inks onto glass substrates. The characterization of ZnO thick films revealed a thickness ranging from 4.9 to 5.4 µm with a surface roughness between 85 and 88 nm. The structural analysis confirmed a hexagonal wurtzite crystalline structure of ZnO, both in powders and in thick films, with a preferred orientation on the (002) and (101) planes. Nanostructures with sizes ranging from 36 to 46 nm were observed, exhibiting irregular agglomerated shapes, with an energy band found between 2.77 and 3.02 eV. A static experimental set up was fabricated for gas sensing tests with continuous UV-LED illumination. The ZnO thick films, well adhered to the glass substrate, demonstrated high sensitivity and selectivity to H_2S gas under continuous UV-LED illumination at low operating temperatures ranging from 35 to 80 °C. The sensitivity was directly proportional, ranging from 3.93% to 22.40%, when detecting H_2S gas concentrations from 25 to 600 ppm.
Palabras claves	Zinc oxide; screen printing; mechanochemical method; nanostructures; UV-LED illumination

Revista	**Veterinary Dermatology**
ISSN	0959-4493
DOI	https://doi.org/10.1111/vde.13248
Título del Artículo	*Psoroptes cuniculi* infestation in pet rabbits in Tabasco, Mexico, 2021-2022
Autores e instituciones de adscripción	Nora Guadalupe Uco Azamar [1]; Guadalupe Arjona Jiménez [1]; Luis Eliezer Cruz Bacab [1]; Hernán Everardo De la Cruz Reyes [2] [1] Academic Division of Agricultural Sciences, Juarez Autonomous University of Tabasco, Villahermosa, Tabasco, Mexico. [2] Foreign Language Teaching Centre, Juarez Autonomous University of Tabasco, Villahermosa, Tabasco, Mexico.
Resumen	**Background:** Rabbits are an important worldwide meat- and fibre-producing animal, and they are popular pets. The rabbit ear mite, *Psoroptes cuniculi*, causes severe dermatological disease. Epidemiological data on *P. cuniculi* infestations are important for public health. **Objective:** The objective of the study was to determine the frequency of *P. cuniculi* infestation in pet rabbits and evaluate epidemiological factors associated with infestation. **Animals:** Two hundred pet rabbits presented for veterinary care between 2021 and 2022. **Materials and methods:** Physical examination, otoscopy and microscopy were used for ear mite identification. Association with age, sex, body mass index (BMI), breed, feeding and housing management was analysed. **Results:** Of the 200 rabbits, 59 (29.5%) were positive for *P. cuniculi*. Only female sex had a positive association with *P. cuniculi*. **Conclusions and clinical significance:** *Psoroptes cuniculi* in pet rabbits has a similar frequency to that reported in meat-producing rabbits, and female sex had a positive association.
Palabras claves	Oryctolagus cuniculus; associated factors; frequency; psoroptic mange.

Revista	**CERAMICS INTERNATIONAL**
ISSN	1873-3956
DOI	https://doi.org/10.1016/j.ceramint.2024.05.482
Título del Artículo	Realization of CO_2 gas sensors and broadband photodetectors using metal/high-k CeO_2/p-Si heterojunction

Autores e instituciones de adscripción	S. Godavarthi [1]; Sunil Singh Kushvaha [2]; D. Saha [3]; Mohammad Altaf [4]; Nanda Kumar Reddy Nallabala [5]; C. Yuvaraj [6]; M. Ramprasad Reddy [7]; Mohan Kumar Kesarla [8]; K. Rahim Bakash [9]; G. Gopi Krishna [10]; P. Rosaiah [11]; T.V.K. Karthik [12]; Vasudeva Reddy Minnam Reddy [13] [1] Investigadoras e Investigadores por México, División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Cunduacán, 86690, Tabasco, Mexico [2] CSIR- National Physical Laboratory, Dr. K.S. Krishnan Road, New Delhi, 110012, India [3] Department of Physics, Dr. Vishwanath Karad MIT World Peace University, Pune, Maharashtra, 411038, India [4] Department of Chemistry, College of Science, King Saud University, P.O. Box 2455, 11451, Riyadh, Saudi Arabia [5] Department of Physics, Madanapalle Institute of Technology and Science, Madanapalle, 517 325, A.P, India [6] Department of Mechanical Engineering, Madanapalle Institute of Technology & Science, Madanapalle, 517 325, India [7] Department of EEE, Aditya College of Engineering, Madanapalle-517 325, A.P, India [8] Instituto de Ciencias Físicas, Universidad Nacional Aut'onoma de Mexico, C.P 62210, Cuernavaca, Morelos, Mexico [9] Department of Electronic Engineering and Organic Electronics Research Center, Ming Chi University of Technology, New Taipei City, 24301, Taiwan [10] The Apollo University, Chittoor, 517 127, India [11] Department of Physics, Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences (SIMATS), Thandalam, Chennai, 602 105, India [12] Tecnologico de Monterrey, School of Engineering and Sciences, Department of Mechanics and Advanced Materials, Avenida Lago de Guadalupe KM 3.5, Margarita Maza de Juárez, 52926, Ciudad Lopez Mateos, Mexico [13] School of Chemical Engineering, Yeungnam University, Gyeongsan, 38541, Republic of Korea
Resumen	Realization of high-k dielectric oxide material-based devices such as photodetectors (PDs)/ gas sensors fabricated on silicon substrate seems to be the utmost promising as a cost-effective approach to use in next generation optoelectronic field. We have explored metal/CeO_2/p-Si heterojunction to construct as a broadband (BB) PD and CO_2 gas sensor device. The effect of post-annealing procedure on photodetection and CO_2 gas sensing characteristics were correlated using AFM, XRD, XPS, Raman and UV–Vis studies. At 0 V bias, the fabricated as-deposited Au/CeO_2/p-Si PD device exhibits outstanding performance with enhanced responsivity of 85 AW^{-1} (at 910 nm), detectivity of 1.36×10^{15} Jones (at 850 nm), EQE of 1.3×10^4 % (at 850 nm), faster rise and fall times of 124 ms and 107 ms (at 900 nm). On the other hand, the photodetection characteristic parameters were slightly deteriorated as a function of annealing with respect to the as-deposited device. One of the causes for this fact was attributed to the increase in rms surface roughness (AFM) and decrease in absorbance of CeO_2 thin film (UV–Vis). Additionally, Ag/CeO_2/p-Si heterojunction was studied as a CO_2 gas sensor and evaluated response/recovery times as a function of CO_2 gas concentration. Sensing responses of CeO_2 as-deposited, CeO_2-400, CeO_2-500, CeO_2-600 and CeO_2-700 °C were around 58, 60, 62, 81 and 90 %, respectively, when exposed to 200 ppm of CO_2. Thus, we validate that the prospect of integrating enhanced performance in BB PDs and CO_2 gas sensors using metal/CeO_2/p-Si heterojunction could serve as a basic building block in near future optoelectronic applications. Furthermore, the effect of post-annealing temperature on the morphological, structural, BB photodetection and CO_2 gas sensing properties were discussed in detail.
Palabras claves	N/A

Revista	**ACTA BOTÁNICA MEXICANA**
ISSN	0187-7151
DOI	https://doi.org/10.21829/abm131.2024.2262
Título del Artículo	Reestablishment of *Zamia lawsoniana* (*Zamia*ceae, Cycadales), an endemic species of Mexico, with first description ofthe ovulate strobilus
Autores e instituciones de adscripción	Fernando Nicolalde Morejón [1]; Lilí Martínez Domínguez [2]; Marlon Aramis González Aguilar [3]; Dennis W. Stevenson [4] [1] Universidad Veracruzana, Instituto de Investigaciones Biológicas, Laboratorio de Taxonomía Integrativa, 91190 Xalapa, Veracruz, Mexico. [2] Universidad Veracruzana, Facultad de Biología, Zona Universitaria, 91090 Xalapa, Veracruz, Mexico. [3] Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias Biológicas, 86150 Villahermosa, Tabasco, Mexico. [4] 4The New York Botanical Garden, Bronx, 10458-5120 New York, USA.
Resumen	**Background and Aims:** *Zamia*, with 86 species, is the most diverse Neotropical cycad genus. In Mexico, 18 species occur, of which 15 are endemics. These taxa are distributed from sea

Resumen	level to 1200 m a.s.l. Recently, the phenology of *Zamia* in wild populations from southern Veracruz and Tabasco was studied to evaluate the morphological patterns of reproductive structures. While these records have been considered as *Z. loddigesii*, a species with a wide distribution along the Gulf of Mexico, different populations do possess morphological differences. Based on these data, we reevaluated the synonymy of *Z. lawsoniana*, which was described in 1884 and synonymized with *Z. loddigesii* in 1995. **Methods:** Botanical material was collected from three populations in Tabasco, ten in Veracruz and two in Oaxaca previously considered part of *Z. loddigesii*. Reproductive structures were measured at maturity in habitat. Populations were visited during 2022 and 2023 to record reproductive phenology. Herbarium specimens of *Zamia lawsoniana* and morphologically similar species (*Z. loddigesii*, *Z. spartea* and *Z. stenophyllidia*) were examined. A morphological description and an illustration for *Z. lawsoniana* were prepared. In addition, an identification key that included related species in terms of morphology, geography and phylogenetics was made. **Key results:** *Zamia lawsoniana* is removed from synonymy and some taxonomic clarifications are made. In this context, we provide a complete description of pollen strobili, including the microsporophylls, range of vegetative morphological variation, and a botanical illustration. Additionally, the ovulate strobilus is described for the first time and a preliminary conservation status is proposed. **Conclusions:** Based on morphological evidence of reproductive structures and vegetative characters, we propose the reestablishment of *Zamia lawsoniana* and its removal from synonymy with *Z. loddigesii*.
Palabras claves	Gymnosperms; Mesoamerica; Neotropics; taxonomy

Revista	**BMC ZOOLOGY**
ISSN	2056-3132
DOI	https://doi.org/10.1186/s40850-024-00214-y
Título del Artículo	Regeneration of the caudal fin of the evolutionary ancient tropical gar *Atractosteus tropicus*
Autores e instituciones de adscripción	Alberto J. Ríos Flores [1,2,3]; Sandra López Flores [1]; Jose A. Martínez Moreno [1]; Karen Y Falcon Romero [4]; Gloria G Asencio Alcudia [5]; César A Sepúlveda Quiroz [5,6]; Rafael Martínez García [4]; Elizabeth Rodríguez Salazar [2]; Carlos A Alvarez González [5]; Ernesto Maldonado [2] [1] Universidad del Valle de México Campus Lomas Verdes, Ciudad de México, Mexico. [2] EvoDevo Research Group, Unidad de Sistemas Arrecifales, Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México, UNAM, Puerto Morelos, Quintana Roo, México. [3] Posgrado en Ciencias Biomédicas, Universidad Nacional Autónoma de México, UNAM, Ciudad de México, México. [4] Universidad del Valle de Mexico Campus Villahermosa, Tabasco, Mexico. [5] Laboratorio de Fisiología en Recursos Acuáticos, División Académica de Ciencias Biológicas, Universidad Juarez Autónoma de Tabasco, Campeche, Tabasco, Mexico. [6] Tecnológico Nacional de México Campus Villahermosa, Villahermosa-Frontera, Cd. Industrial, Villahermosa, Tabasco, Mexico.
Resumen	**Background:** The tropical gar (*Atractosteus tropicus*), a member of the Lepisosteidae family, is native to regions extending from southeastern Mexico to southern Costa Rica. This species serves as a unique bridge between tetrapods and teleosts due to its phylogenetic position, slow evolutionary rate, dense genetic map, gene similarities with humans, and ease of laboratory cultivation. As a taxonomic sister group to teleosts like the zebrafish (*Danio rerio*), known for its high regenerative capacity, it remains unclear whether the tropical gar shares a similar ability for regeneration. **Results:** This study aims to elucidate the caudal fin regeneration process in tropical gar through skeletal and histological staining methods. Juvenile specimens were observed over a two-month period, during which they were fed brine shrimp, and anesthetized with 1% eugenol for caudal fin amputation. Samples were collected at various days post-amputation (dpa). Alcian blue and alizarin red staining were used to highlight skeletal regeneration, particularly the formation of new cartilage, while histological staining with hematoxylin and eosin was performed to observe tissue regeneration at the amputation site. **Conclusions:** The findings reveal a remarkable ability for caudal fin regeneration in juvenile tropical gar. Given the Garfish evolutionary relationship with teleosts, this opens new avenues for research into tissue regeneration across different groups of Actinopterygii.
Palabras claves	Caudal fin regeneration; EvoDevo; Garfish; Tropical gar.

Revista	**JOURNAL OF DAIRY RESEARCH**
ISSN	0022-0299,
DOI	https://doi.org/10.1017/S0022029924000311
Título del Artículo	Relationship between body weight and hip width in dairy buffaloes (*Bubalus bubalis*)
Autores e instituciones de adscripción	Alvar Alonzo Cruz Tamayo [1]; Marco Antonio Ramírez Bautista [2]; Daniel Mota Rojas [3]; José Carlos Escobar España [4]; Ricardo García Herrera [5]; Antonio Leandro Chaves Gurgel [6]; Tairon Pannunzio Dias Silva [6]; Marcos Jácome de Araújo [6]; Juliana Caroline Santos Santana [7]; Isadora Osorio Maciel Aguiar [6]; Luís Carlos Vinhas Ítavo [7]; Alfonso Juventino Chay Canul [5] [1] Facultad de Ciencias Agropecuarias, Universidad Autónoma de Campeche, Escárcega, Campeche, México. [2] Tecnológico Nacional de México/Instituto Tecnológico de Chiná, Chiná, Campeche, México. [3] Neurophysiology, Behavior, and Animal Welfare Assessment, Department of Animal Production and Agriculture, Universidad Autónoma Metropolitana, Xochimilco Campus, Mexico, Mexico. [4] Facultad de Ciencias Agrícolas Campus IV, Universidad Autónoma de Chiapas, entronque Huehuetán, Chiapas, México. [5] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Carretera Villahermosa-Teapa, Villahermosa, Tabasco, México. [6] Campus Professora Cinobelina Elvas, Universidade Federal do Piauí, Bom Jesus, PI, Brasil. [7] Faculdade de Medicina Veterinária e Zootecnia, Universidade Federal de Mato Grosso do Sul, Campo Grande, MS, Brasil.
Resumen	The objective of the present study was to evaluate the relationship between body weight (BW) and hip width (HW) in dairy buffaloes (*Bubalus bubalis*). HW was measured in 215 Murrah buffaloes with a BW of 341 ± 161.6 kg, aged between three months and five years, and raised in southeastern Mexico. Linear and non-linear regressions were used to construct the prediction models. The goodness of fit of the models was evaluated using the Akaike information criterion (AIC), Bayesian information criterion (BIC), coefficient of determination (R^2), mean squared error (MSE), and root MSE (RMSE). Additionally, the developed models were evaluated through internal and external cross-validation (k-folds) using independent data. The ability of the fitted models to predict the observed values was assessed based on the root mean square error of prediction (RMSEP), R^2, and mean absolute error (MAE). The relationship between BW and HW showed a high correlation coefficient ($r = 0.96$, $P < 0.001$). The chosen fitted model to predict BW was: -176.33 (± 40.83***) + 8.74 (± 1.79***) × HW + 0.04 (± 0.01*) × HW^2, because it presented the lowest MSE, RMSE, and AIC values, which were 1228.64, 35.05 and 1532.41, respectively. Therefore, with reasonable accuracy, the quadratic model using hip width may be suitable for predicting body weight in buffaloes.
Palabras claves	Biometric measurements; *Bubalus bubalis*; body weight; humid tropics; mathematical models; predict.

Revista	**JOURNAL OF MATERIALS SCIENCE**
ISSN	1573-4803
DOI	https://doi.org/10.1007/s10853-024-09785-0
Título del Artículo	Relationship of $CaZn_2OH_6.2H_2O$ nanoparticles synthesized by different methods with its antifungal activity
Autores e instituciones de adscripción	Montserrat Soria Castro [1,2]; Patricia Quintana [1]; Susana De la Rosa García [3]; Stephania Lázaro Mass [1]; Mayra A. Álvarez Lemus [4]; Félix Maldonado Desena [3]; Sergio Gómez Cornelio [4,5] [1] National Laboratory of Nano and Biomaterials, Department of Applied Physics, CINVESTAV-IPN, A.P. 73, Cordemex, 97310, Mérida, Yucatán, Mexico [2] Applied Research and Technology Unit, UNITA, Faculty of Chemistry, UNAM, Research and Technological Innovation Park, PIIT, 66628, Apodaca, Monterrey, NL, Mexico [3] Laboratory of Applied Microbiology, Academic Division of Biological Sciences, Juarez Autonomous University of Tabasco, 0.5 Km Carretera Villahermosa-Cárdenas, 86000, Villahermosa, Tabasco, Mexico [4] Nanotechnology Laboratory-CICTAT, Academic Division of Engineering and Architecture, Juarez Autonomous University of Tabasco, Carr. Cunduacán-Jalpa de Méndez, Km 1, 86690, Cunduacán, Tabasco, Mexico [5] Polytechnic University of the Center, Km. 22.5 Carretera Federal Villahermosa-Teapa, Tumbulushal, Centro, 86290, Villahermosa, Tabasco, Mexico

Resumen	Recent research has increasingly focused on synthesizing nanoparticles (NPs) through various methods to determine how these processes influence their characteristics, and consequently, their biological activity. Calcium zinc hydroxide dihydrate ($CaZn_2(OH)_6 \cdot 2H_2O$) nanoparticles, designates as CZ, were obtained via sol–gel (CZ-SG), hydrothermal (CZ-HT), and microwave (CZ-MW) methods, and their properties were characterized using XRD, SEM, TEM, and BET analyses. The different synthesis revealed distinct CZ nanoparticle attributes, including variations in crystallite sizes (72 nm for CZ-SG, 65 nm for CZ-HT and CZ-MW) and morphologies (fibrous for CZ-HT and spherical agglomerates for CZ-SG and CZ-MW). Surface area analysis showed low values across all synthesis methods, with CZ-HT exhibiting the best surface area (8.154 m^2/g). The investigation also explored how these synthesis routes influence antifungal efficacy against fourteen fungal strains associated with the biodeterioration of limestone cultural heritage structures. Our results highlight the notable antifungal activity of CZ-NPs, particularly those synthesized via the CZ-HT method, which demonstrated the most effective antifungal action as evidenced by the lowest minimum inhibitory concentration (MIC) and minimum fungicidal concentration (MFC). This effectiveness is attributed to the unique fibrous morphology, which proves to be highly inhibitory to fungal cell proliferation. These findings not only advance our understanding of CZ NPs-mediated antifungal mechanisms but also open a new effort for the development of effective preservation strategies for cultural heritage conservation.
Palabras claves	Nanoparticles; Antifungal Agents; Calcium Hydroxide; X-Ray Diffraction; Cultural Property; Surface Analysis; Digital Preservation

Revista	**BRAZILIAN JOURNAL OF VETERINARY PATHOLOGY**
ISSN	1983-0246
DOI	https://10.0.94.6/bjvp.1983-0246.v17i1p34-38
Título del Artículo	Retrospective study of congenital anomalies in cattle from 2008 to 2020, necropsied at the Center for Teaching and Diagnosis of Bovine Diseases, UNAM, Mexico
Autores e instituciones de adscripción	Kaylin L Moctezuma [1]; Mario A Bedolla Alva [2]; Guadalupe Arjona Jiménez [3] [1] Department of Pathology, SoBran, Silver Spring, Maryland, USA [2] Center for Teaching and Diagnosis of Bovine Diseases, National Autonomous University of Mexico, Mexico City, Mexico. [3] Juarez Autonomous University of Tabasco, Villahermosa, Tabasco, Mexico
Resumen	From the files of the necropsy archive of the Center for Teaching and Diagnosis of Bovine Diseases (CEDEB), UNAM, a retrospective study of the cases of bovines sent to the post-mortem room was conducted, which covered a period of 13 years from 2008 to 2020, with the aim of identifying which are the main congenital diseases diagnosed in the post-mortem study. For the data analysis, the individual's age, breed, and morphological diagnosis were considered. From 2008 to 2020, 2000 animals (100%) of which were divided into developmental stages: lactating calves, weaned calves, heifers, adults, and abortions; 40 (2%) of those animals were diagnosed with one or several developmental anomalies, the majority of cases were from lactating animals. The predominant congenital diseases were cardiovascular, locomotor, and gastrointestinal. From the group of congenital diseases of the cardiovascular system, they affected most stages of development, such as lactating calves, weaned calves, heifers, and adults.
Palabras claves	Bovines, congenital anomalies, abortion, lactating calves, weaned calves, heifers, adults.

Revista	**ACTA TRÓPICA**
ISSN	1873-6254
DOI	https://doi.org/10.1016/j.actatropica.2024.107117
Título del Artículo	Risk of a vector-borne endemic zoonosis for wildlife: Hosts, large-scale geography, and diversity of vector-host interactions for *Trypanosoma cruzi*
Autores e instituciones de adscripción	Laura Rengifo Correa [1,2]; Ángel Rodríguez Moreno [3]; Ingeborg Becker [4]; Jorge Abelardo Falcón Lezama [5]; Roberto Tapia Conyer [6]; Sokani Sánchez Montes [7]; Gerardo Suzán [8]; Christopher R. Stephens [1,9]; Constantino González Salazar [10]

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Resumen	Drivers for wildlife infection are multiple and complex, particularly for vector-borne diseases. Here, we studied the role of host competence, geographic area provenance, and diversity of vector-host interactions as drivers of wild mammal infection risk to *Trypanosoma cruzi*, the aetiological agent of Chagas disease. We performed a systematic sampling of wild mammals in 11 states of Mexico, from 2017 to 2018. We tested the positivity of *T. cruzi* with the Tc24 marker in tissues samples for 61 wild mammal species (524 specimens sampled). 26 mammal species were positive for *T. cruzi*, of which 11 are new hosts recorded in Mexico 75 specimens were positive and 449 were negative for *T. cruzi* infection, yielding an overall prevalence of 14.3%. The standardized infection risk of *T. cruzi* of our examined specimens was similar, no matter the host species or their geographic origins. Additionally, we used published data of mammal positives for *T. cruzi* to complement records of *T. cruzi* infection in wild mammals and inferred a trophic network of Triatoma spp. (vectors) and wild mammal species in Mexico, using spatial data-mining modelling. Infection with *T. cruzi* was not homogeneously distributed in the inferred trophic network. This information allowed us to develop a predictive model for *T. cruzi* infection risk for wild mammals in Mexico, considering risk as a function of the diversity of vector-host spatial associations in a large-scale geographic context, finding that the addition of competent vectors to a multi-host parasite system amplifies host infection risk. The diversity of vector-host interactions per se constitutes a relevant driver of infection risk because hosts and vectors are not isolated from each other.
Palabras claves	Endemic zoonoses; Risk model; Spatial data mining; *Trypanosoma cruzi*; Vector-borne diseases.

Revista	**METHODOLOGY AND COMPUTING IN APPLIED PROBABILITY**
ISSN	1573-7713
DOI	https://doi.org/10.1007/s11009-024-10102-0
Título del Artículo	Ruin Probabilities as Recurrence Sequences in a Discrete-Time Risk Process
Autores e instituciones de adscripción	Ernesto Cruz [1]; Luis Rincón [1]; David J. Santana [2] [1] Departamento de Matemáticas, Facultad de Ciencias, UNAM, Mexico, Mexico [2] División Académica de Ciencias Básicas, UJAT, México, Villahermosa, Tabasco, Mexico
Resumen	The theory of linear recurrence sequences is applied to obtain an explicit formula for the ultimate ruin probability in a discrete-time risk process. It is assumed that the claims distribution is arbitrary but has finite support $\{0,1,\ldots,m+1\}$, for some integer $m\geq 1$. The method requires finding the zeroes of an m degree polynomial and solving a system of m linear equations. An approximation is derived and some numerical results and plots are provided as examples.
Palabras claves	Ruin probability; Discrete-time risk process; Recurrence sequences

Revista	**COMMUNICATIONS IN STATISTICS - THEORY AND METHODS**
ISSN	1098-5549
DOI	https://doi.org/10.1080/03610926.2022.2087091
Título del Artículo	Ruin probability for finite negative binomial mixture claims via recurrence sequences
Autores e instituciones de adscripción	Rincón Luis [1]; Santana David J. [2] [1] Departamento de Matemáticas, Facultad de Ciencias, UNAM, Ciudad de Mexico, México. [2] División Académica de Ciencias Básicas, UJAT, Villahermosa, México
Resumen	A new procedure to find the ultimate ruin probability in a discrete-time risk model is presented for claims with a mixture of *m* negative binomial distributions. The method involves the theory of linear recurrence sequences. It requires to find the zeroes of an *m* degree polynomial and the solution of a system of *m* linear equations. Numerical results and plots are provided as examples.
Palabras claves	Ruin probability; discrete time risk model; negative binomial distribution; recurrence sequences

Revista	**EUROPEAN PUBLIC AND SOCIAL INNOVATION REVIEW**
ISSN	2529-9824
DOI	https://doi.org/10.31637/epsir-2024-520
Título del Artículo	Sanborns Group S.A.B. of C.V. and sustainable development goal; Grupo Sanborns S.A.B. de C.V. y los objetivos de desarrollo sostenible
Autores e instituciones de adscripción	Cecilia García Muñoz Aparicio [1]; María del Carmen Navarrete Torres [1] [1]Universidad Juarez Autonoma de Tabasco
Resumen	**Introducción:** Grupo Sanborns S.A.B de C.V, conocido como Sanborns, es una compañía mexicana con presencia a nivel nacional en México, acreditada por ser una cadena de tiendas departamentales y restaurantes con orientación al servicio y satisfacción del cliente. **Metodología:** El objetivo de la investigación es analizar dónde radica la Responsabilidad Social Corporativa (RSC) de una gran corporación mexicana y la metodología empleada fue de tipo descriptiva y analítica. Se consultaron fuentes bibliográficas como libros, revistas, noticias y web de la compañía; se describió de manera precisa y detallada la organización sin intervenir en su proceso, registrando sus características de acuerdo a las fuentes de información para su análisis posterior. **Resultados:** Se comprobó que es una empresa socialmente responsable con principios y valores que cumplen con su desempeño social, laboral, ambiental de salud y seguridad. **Discusión:** se corrobora la hipótesis de que se trata de una organización socialmente responsable pero no alineada a los Objetivos de Desarrollo Sostenible (ODS) en su totalidad. **Conclusiones:** Por ser subsidiaria del Grupo Carso, S.A.B. de C.V., uno de los Grupos Económicos más importantes de México e Iberoamérica, deja como futura línea de investigación realizar un comparativo entre empresas que conforman este grupo.
Palabras claves	Acciones, estrategias, empresa; grupo económico; Objetivos de Desarrollo Sostenible, organización; responsabilidad social corporativa, responsabilidad social

Revista	**SALUD, CIENCIA Y TECNOLOGÍA - SERIE DE CONFERENCIAS**
ISSN	2953-4860
DOI	https://doi.org/10.56294/sctconf20241022
Título del Artículo	Satisfaction in university students: a study of library services
Autores e instituciones de adscripción	Pérez Sandoval, Abraham Gerardo [1]; Avalos Díaz, Aránzazu [1]; Juárez Solís, Sandra [1]; Sandoval Caraveo, María del Carmen [2] [1] Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias Económico Administrativas. Tabasco, México. [2] Universidad Juárez Autónoma de Tabasco, División Académica de Ingeniería y Arquitectura. Tabasco, México.

Resumen	The university library is a fundamental element in the mission of Higher Education Institutions since it provides a space to obtain information that serves as a basis for scientific knowledge. The objective of this research was to measure the satisfaction of students in the areas of Engineering and Technological Development with library services in a public university in southeastern Mexico. The method was quantitative, descriptive and correlational, with a non-experimental cross-sectional design. The population was 5,278 students and through simple random sampling with 95 % confidence and 5 % error, a sample of 360 students was obtained. The instrument reported a reliability through Cronbach's Alpha of α=0,896. The exploratory factor analysis showed a KMO of ,907, Barlett's test of sphericity gave significant values (X2= 2356,439, gl= 171, p≤ ,000) explaining a total variance of 55,517 % which demonstrates a valid and reliable instrument to measure student satisfaction with library services, the data evidenced a sustainable factor model to measure the construct in four dimensions: accessibility, services, human resources and functionality. The results reported that 25,8 % of the students were dissatisfied, indicating the highest degree of dissatisfaction in the availability of computers and Internet access. This research provides data to be considered for the continuous improvement of library services and contributes with methodological aspects that can be extrapolated to other contexts.
Palabras claves	Students; Satisfaction; Library; University

Revista	**VETERINARY RESEARCH COMMUNICATIONS**
ISSN	1573-7446
DOI	https://doi.org/10.1007/s11259-023-10248-1
Título del Artículo	Search for antibodies against *Trichinella* in two synanthropic Procyonidae species from southeast Mexico: white-nosed coatis (*Nasua narica*) and raccoons (*Procyon lotor*)
Autores e instituciones de adscripción	Adrián Hernández Ortiz [1,2]; Emilio Rendón Franco [3]; Claudia Irais Muñoz García [3]; Claudia Villanueva García [4]; Heriberto Caballero Ortega [5]; Jorge Luis de la Rosa Arana [6] [1] Facultad de Medicina Veterinaria y Zootecnia, Universidad Nacional Autónoma de México, Mexico City, México. [2] Department of Veterinary Microbiology, University of Saskatchewan, Saskatoon, Canada. [3] Departamento de Producción Agrícola y Animal, Universidad Autónoma Metropolitana, Mexico City, México. [4] Laboratorio de Ecología del Paisaje y Cambio Global, División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Villahermosa, México. [5] Laboratorio de Inmunología Experimental, Instituto Nacional de Pediatría, Mexico City, México. [6] Facultad de Estudios Superiores Cuautitlán, Universidad Nacional Autonoma de México, Cuautitlán Izcalli, México.
Resumen	*Trichinella* is a nematode that are spread by the consumption of parasitized meat. Carnivora, a mammalian order, serve as key hosts for this parasite. However, evidence of *Trichinella* in wildlife from the Neotropics is extremely scarce, with reports documenting its presence only for five carnivore species: two Felidae, one Otariidae and two Mustelidae. Other widely distributed species that are consumed as bushmeat, such as Procyonidae, have not been studied in this context. A long-term study was performed for antibodies against *Trichinella* in coatis (*Nasua narica*) and common raccoons (*Procyon lotor*) in southeastern Mexico. Between the summer of 2009 to the winter 2013, a total of 291 coati samples and 125 raccoon samples were collected from a tropical green area located within an urban zone. An Enzyme-linked immunosorbent assay (ELISA) was used to detect antibodies against the excretory and secretory products of *Trichinella spiralis* muscle larva. ELISA-positive samples were further confirmed by Western Blot analysis. Results showed no evidence of antibodies during the first two years of study. However, in 2011, a sudden appearance of anti-*Trichinella* occurred. The seroprevalence reached its highest peak of 43% for coatis during winter 2013 and 53% for raccoons in summer 2013. This is the first study that provides evidence of *Trichinella* circulation within a neotropical procyonid community.
Palabras claves	Carnivore; Immunosorbent assay (ELISA); Trichinellosis; Western blot (WB); Wildlife.

Revista	**ELECTRIC POWER SYSTEMS RESEARCH**
ISSN	1873-2046
DOI	https://doi.org/10.1016/j.epsr.2024.110810
Título del Artículo	Selective optimal under-frequency load shedding based on trajectory sensitivities
Autores e instituciones de adscripción	A. Reveles Pinedo [1]; C.R. Fuerte Esquivel [2]; A. Pizano Martínez [3]; R. Ramírez Betancour [4] [1] UNAM, Mexico City, Mexico [2] Universidad Michoacana, Morelia, Mexico [3] Universidad de Guanajuato, Salamanca, Mexico [4] UJAT, Villahermosa, Mexico
Resumen	This paper proposes an optimal selective under-frequency load shedding strategy to perform a corrective control action that prevents the loss of frequency stability. The proposal decomposes this optimal load shedding problem into two mutually connected subproblems: the frequency stability analysis and the optimal load shedding. These two subproblems are sequentially solved until the minimum load shedding needed to recover the center-of-inertia frequency close to its nominal value is determined. The link between those two subproblems is a frequency performance index, which indicates the frequency deviation at each generation node with respect to the nominal frequency value. To selectively perform the load shedding, two novel methods are developed to identify which nodal loads most affect the frequency dynamics and to determine how the selected loads must be shed to return the frequency close to its nominal value at the maximum rate of change. The effectiveness of the proposed method is numerically demonstrated in two benchmark power systems.
Palabras claves	N/A

Revista	**INTERNATIONAL JOURNAL OF THEORETICAL PHYSICS**
ISSN	1572-9575
DOI	https://doi.org/10.1007/s10773-024-05626-7
Título del Artículo	Singular Lagrangians and the Faddeev-Jackiw Formalism in Classical Mechanics
Autores e instituciones de adscripción	Jorge Mauricio Paulin Fuentes [1]; Carlos Manuel López Arellano [1]; Jaime Manuel Cabrera [1] [1] División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Km 1 Carretera Cunduacán-Jalpa, Cunduacán, 86690, Tabasco, México
Resumen	Classical mechanical systems with internal constraints will be examined using the extended symplectic formalism of Faddeev-Jackiw. We will derive the generalized brackets of the theory and the corresponding equations of motion. The investigation will include the analysis of a gauge system, leading to the identification of associated gauge transformations. The obtained results will be compared with those obtained through the Dirac-Bergmann algorithm, as previously documented in the literature. The symplectic approach turns out to be simpler and efficient compared to the Dirac methods in its mathematical operations, and easy for computer implementation.
Palabras claves	Modified Faddeev jackiw; Symplectic matrix; Gauge transformations; Constraints; Mathematical Physics

Revista	**DATA AND METADATA**
ISSN	1744-263X
DOI	https://doi.org/10.56294/dm2024227
Título del Artículo	Social capital in small industrial firms and its link with innovation
Autores e instituciones de adscripción	Edith Georgina Surdez Pérez [1]; María del Carmen Sandoval Caraveo [2]; Maribel Flores Galicia [3] [1] Universidad Juárez Autónoma de Tabasco. División Académica de Ciencias Económico Administrativas. Tabasco, México. [2] Universidad Juárez Autónoma de Tabasco. División Académica de Ingeniería y Arquitectura. Tabasco, México. [3] Universidad Juárez Autónoma de Tabasco. División Académica de Educación y Artes. Tabasco, México

Resumen	**Introduction:** social Capital in organizations is an intangible asset that represents the favourable relationships that exist between work teams, within an organization and externally, to different interest groups. **Objective:** this study examined the link between internal relational social capital (RSC) and external RSC with innovation in small industrial firms in Tabasco, Mexico. There was also an inquiry into how much internal RSC and external RSC explain innovation. **Methods:** the design was nonexperimental, cross-sectional, descriptive, correlational, and explanatory. Linear regression analysis was used. **Results:** significant positive relationships was identified between internal RSC and external RSC and innovation. The internal RSC and external RSC contributed significantly to the explaining of innovation. Areas of opportunity were identified for these firms in process design and formal research activities for new raw materials, production procedures and patent generation. **Conclusion:** to promote innovation, managers of small industrial companies must continue to establish strategies and practices to strengthen RSC.
Palabras claves	Internal Relational Social Capital; External Relational Social Capital; Innovation; Small Industrial Firms; Linear regression

Revista	**INTERNATIONAL JOURNAL OF HUMAN-COMPUTER INTERACTION**
ISSN	0162-1459
DOI	https://doi.org/10.1080/10447318.2022.2132357
Título del Artículo	Social Presence Awareness Visualization in a Collaborative Videogame
Autores e instituciones de adscripción	María Teresa Cepero [1]; Luis G. Montane Jiménez [1]; Guadalupe Toledo Toledo [2]; Betania Hernández Ocaña [3]; Carlos Alberto Ochoa [1] [1] Facultad de Estadıstica e Informatica, Universidad Veracruzana, Xalapa, Mexico. [2] Computer Engineering Department, Universidad del Istmo, Santo Domingo Tehuantepec, Mexico. [3] Academic Division of Information Sciences and Technologies, Universidad Juarez Autonoma de Tabasco, Villahermosa, Mexico
Resumen	The awareness information in collaborative systems supports the interaction between people. However, traditional awareness systems are limited to mechanisms that display data often isolated from the context of social interaction and do not fully reflect the individual relevance of a person (social presence) in the collaborative activity. Therefore, proposing more dynamic and efficient tools to facilitate the acquisition and presentation of social presence information is convenient. This research proposes a social presence visualization system and its conceptual architecture and develops a user-centered prototype. The prototype integrates functions that let the user select dif ferent representations of social presence (pictogram, bar chart, donut chart, and radial). We used the prototype in a collaborative video game (AssaultCube-CX) to study the effects of social pres ence visualization on users' performance. We studied the social presence of 12 Mexican volunteers by recording their activities during the tests to analyze their social presence. The social presence quantitative analysis indicates that the visualization of social presence during the collaborative activity increase awareness of social presence and improves team performance in most cases.
Palabras claves	Data Visualization; Awareness; Social Interaction; Collective Representation; Video Games; Prototypes

Revista	**ENERGY EXPLORATION & EXPLOITATION**
ISSN	0144-5987
DOI	https://doi.org/10.1177/01445987241234389
Título del Artículo	Solar drying of oregano leaves (*Plectranthus amboinicus*, *Lour*): Analysis of experimental performance under a tropical climate
Autores e instituciones de adscripción	Margarita Castillo Téllez [1]; Omar Sarracino Martínez [2]; Erika Miranda Mandujano [3]; Geovanni Hernández Gálvez [2]; Damianys Almenares López [2]; Beatriz Castillo Téllez [4]; A. J. Cetina Quiñones [5] [1] Facultad de Ingeniería, Universidad Autónoma de Campeche, Campeche, México [2] Universidad Popular de la Chontalpa, Cárdenas, Tabasco, México [3] Universidad Juárez Autónoma de Tabasco, Villahermosa Centro, Tabasco, México [4] Centro Universitario de Tonalá, Universidad de Guadalajara, Jalisco, México [5] Universidad Autónoma de Yucatán, Yucatán, México

Resumen	Despite the multiple applications of the oregano (*Plectranthus amboinicus* (*Lour*)), an important herbaceous plant because of its medicinal and culinary properties, limited research has been conducted on this species' solar drying. Thus, the experimental drying of oregano leaves in a tropical climate was performed using direct and indirect solar drying and an electric oven in this research work. Also, mathematical modeling of the drying process, moisture diffusivity, activation energy, and colorimetric analysis (as a quality parameter) were accomplished to complement the experimental evaluation and understand the drying process behavior. The results show a shorter drying time obtained with the electric oven with 210 min reached at 65°C; however, the minimum solar drying time (250 min) was achieved with a maximum drying rate of 0.025 g water/g dry matter per minute and minimum final moisture between 0.28 and 0.13 g water/g dry matter was obtained with indirect solar dryer. Moreover, the models that better represented the experimental data were Modified Page, Page, and Logarithmic, with a maximum value of R2 obtained of 0.9980 cor responding to the Logarithmic model. Furthermore, a maximum effective diffusivity value of 1.81E
Palabras claves	Solar drying technologies, activation energy, kinetics and modeling, colorimetry study, sustainable agriculture

Revista	**APPLIED SCIENCES SWITZERLAND**
ISSN	eISSN: 2076-3417
DOI	https://doi.org/10.3390/app14177950
Título del Artículo	Solubility/Insolubility: A Possible Option for Recycling Polystyrene
Autores e instituciones de adscripción	Ángel Isidro Hernández García [1]; Saraí Alejandro Hernández [1]; Zujey Berenice Cuevas Carballo [1]; Jorge Alberto Galaviz Pérez [1]; José Manuel Vázquez Rodríguez [1]; David Guerrero Zárate [1] [1] Multidisciplinary Academic Division of Jalpa de Méndez, Juárez Autonomous University of Tabasco, Villahermosa-Comalcalco Free State Highway Km. 27+000 s/n, Ribera Alta, Jalpa de Méndez 86205, Tabasco, Mexico
Resumen	This work proposes a conceptual design for recovering polystyrene (PS) using solvents of agro-industrial origin. The literature describes the dilution of expanded polystyrene (EPS) in limonene, followed by its insolubilization with alcohols for recovery. However, there is no information on the solubility limit for the PS + limonene + alcohol system, which is critical for the process design. To determine the solubility limit, we diluted the waste EPS in D-limonene, mixed it with ethanol to form a precipitate, and used a gravimetric method to measure the mass of the compounds. These results allowed for the conceptual design of an EPS recycling process using a chemical process simulator, which includes a separator, a distillation column, and auxiliary equipment such as heaters, coolers, and pumps. An empirical correlation was obtained for the solubility limit, which enabled the design of a process for the treatment of 52 kg/s of PS using 0.75 kg/s of ethanol and 2.4 kg/s of D-limonene once the stationary state had been reached. The distillation column is six-stage, with a reflux ratio of 1.5 and duties of 30,000 and −25 847 kW for the condenser and reboiler, respectively.
Palabras claves	Process simulation; precipitation; recycling; circular economy; green solvents

Revista	**JOURNAL OF THE WORLD AQUACULTURE SOCIETY**
ISSN	0893-8849
DOI	https://doi.org/10.1111/jwas.13025
Título del Artículo	Sperm quality of *Litopenaeus vannamei* fed fresh or experimental food in two culture systems
Autores e instituciones de adscripción	Xurxo Barral Pintos [1]; Miguel Arévalo [2]; Karla Escalante [2]; Martín Arenas [3]; Rodrigo Morones [4]; Eduardo Velázquez [4]; Gabriela Gaxiola [2] [1] Posgrado en Ciencias del Mar y Limnología, Universidad Nacional Autonoma de México, Ciudad de México, Mexico [2] Unidad Multidisciplinaria de Docencia e Investigacion de Sisal, Facultad de Ciencias, Universidad Nacional Autonoma de México, Ciudad de México, Mexico [3] Division Académica de Ciencias Biologicas, Universidad Juárez Autonoma de Tabasco, Villahermosa, Mexico [4] Facultad de Medicina Veterinaria y Zootecnia, Universidad Nacional Autonoma de México, Ciudad de Mexico, Mexico

Resumen	The growth of shrimp production through aquaculture has led to efforts to optimize processes such as nutrition during the prematuration and reproductive phases. This study sought an optimal culture system and diet to enhance the reproductive characteristics of male *Litopenaeus vannamei* during prematuration: this compared biofloc with clear water, and an experimental pellet (EP) with a mix of fresh food. Effects were measured in terms of shrimp survival, sperm quality, immunological parameters including prophenoloxidase (ProPO) and hemocyte count, nutritional condition measured as metabolites in hemolymph, hepatopancreas, and reproductive tract, oxidative stress biomarkers in the hepatopancreas and reproductive tract, and relative expression of superoxide dismutase, catalase, glutathione peroxidase, ProPO, alpha2-macroglobulin and caspase in reproductive tract. Survival was higher with pellets (100%) than with fresh food (87%). Shrimp that were fed pellets had a higher hepatosomatic index, higher nutrient concentration in the hepatopancreas, and a higher antioxidant activity in the reproductive tract. Notably, sperm quality remained similar regardless of culture system or diet. These promising results should be ratified with a bioeconomic study to check the feasibility of hatcheries to use monosex tanks and feeding the males with EPs.
Palabras claves	Biofloc; experimental pellet, *Litopenaeus vannamei*, sperm quality

Revista	**AGRIENGINEERING**
ISSN	eISSN: 2624-7402
DOI	https://doi.org/10.3390/agriengineering6030156
Título del Artículo	Subsoiler Tool with Bio-Inspired Attack Edge for Reducing Draft Force during Soil Tillage
Autores e instituciones de adscripción	Francisco Garibaldi Márquez [1]; Ernesto Martínez Reyes [1]; Cornelio Morales Morales [2]; Lenin Ramos Cantú [3]; Mirna Castro Bello [4]; Armida González Lorence [2] [1] Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias, Campo Experimental Pabellón, Pabellon de Arteaga 20670, Aguascalientes, Mexico [2] Tecnológico Nacional de México, Instituto Tecnológico de San Juan del Río, San Juan del Rio 76800, Queretaro, Mexico [3] División Académica de Ingeniería y Arquitectura, Universidad Juárez Autónoma de Tabasco, Cunduacan 86690, Tabasco, Mexico [4] Tecnológico Nacional de México, Instituto Tecnológico de Chilpancingo, Chilpancingo 39090, Guerrero, México
Resumen	To alleviate soil compaction, subsoiling practices using subsoiler implements are commonly implemented. However, subsoiler bodies are subjected to great draft forces because they work deep in the soil. Therefore, to contribute to draft force reduction, in this work, a bio-inspired attack edge for a subsoiler body based on the internal and external contour lines of the claws of the Mexican ground squirrel (*Spermophilus mexicanus*) is proposed. As a first step, computational fluid dynamic (CFD) modeling was used to select the best bionic subsoiler (BS) according to the draft force requirements. Then, the BS was fabricated and field-evaluated, and its real draft force during tillage was contrasted with those of a curve subsoiler (CS) and a straight subsoiler (SS). The field evaluation demonstrated that the BS demands, on average, 12.37% and 22.25% less draft force than the CS and SS, respectively. Additionally, the BS was better at entering the soil since its mean tillage depths were 24.86% and 5.73%higher than those of the SS and CS geometries, respectively. Therefore, it was found that modeling the attacking edge of a subsoiler body after the Mexican ground squirrel clearly reduced the draft force during tillage.
Palabras claves	Soil tillage; bionic subsoiler; draft force; tillage depth

Revista	**EUROPEAN PUBLIC AND SOCIAL INNOVATION REVIEW**
ISSN	2529-9824
DOI	https://doi.org/10.31637/epsir-2024-827
Título del Artículo	Modelo de plan de sucesión para el relevo generacional del profesor investigador
Autores e instituciones de adscripción	López Hernández, Rosa Eva [1] [1] Universidad Juárez Autónoma de Tabasco

Resumen	**Introducción:** La planta académica universitaria está madurando, se han planteado estrategias para que el talento no se retire, pero es tiempo de preparar el relevo generacional para preservar los conocimientos tácitos y evitar un decremento en los productos científicos que afectarán fuertemente a la universidad. **Metodología:** Enfoque cualitativo con el diseño de estudio de caso, bajo la luz de la teoría de sistemas; se entrevistaron a cinco profesores investigadores y 12 puestos clave. Instrumentos: guías de entrevistas semiestructuradas y la hermenéutica. El discurso se analizó con un software cualitativo. **Resultados:** Se presenta un modelo teórico del plan de sucesión para profesores investigadores en una universidad pública mexicana. **Discusión:** Barnett y Davis (2008) publicaron que se ha de mostrar el proceso, lo que fue corroborado por PI.02 al expresar que la universidad debe socializar los planes de sucesión. **Conclusiones:** Los planes de sucesión coadyuvan en la gestión del talento humano para realizar el relevo generacional de los profesores-investigadores sin exabruptos, de allí la importancia del modelo diseñado, donde se observan las categorías: planes de sucesión, gestión del talento, gestión del conocimiento; asimismo se representan el sistema interno y externo de la Institución de Educación Superior.
Palabras claves	Scientific researcher; Educational model; Succession plan; Succession plan; Academic professor; Generational change; Human talent; Knowledge transfer; Public university.

Revista	**REVISTA MEXICANA DE INGENIERÍA QUÍMICA**
ISSN	1665-2738
DOI	https://doi.org/10.24275/rmiq/IA24167
Título del Artículo	Sulfidogenic activity related to microbial diversity in a biological system employed for sulfate-rich wastewater treatment
Autores e instituciones de adscripción	C.D. Loreto Muñoz [1]; G. López Avilés [1]; M.C. De la Cruz Leyva [2]; A.R. Martin García [1]; F.J. Almendariz Tapia [1] [1] Departamento de Ingeniería Química y Metalurgia, Universidad de Sonora. Rosales y Blvd. Luis Encinas. Hermosillo, Sonora, México, C.P. 83000. Stephen Whitaker [2] División Académica Multidisciplinaria de los Ríos, Universidad Juárez Autónoma de Tabasco. Carretera Tenosique. Estapilla Km. 1. Tenosique, Tabasco, México, C.P. 86901.
Resumen	Industrial activity disrupts the natural sulfur cycle by the generation of sulfate-rich wastewater. Nonetheless, these effluents can be treated in anaerobic reactors. This study seeks to relate sulfidogenic activity with microbial diversity during the start-up of an anaerobic sulfate-reducing reactor. An anaerobic sludge was characterized employing 16s rRNA assays. The sludge was adapted to sulfate-reducing activity in an up-flow fixed bed reactor with 2 and 1.5 COD/SO2−4 ratios. Simultaneous organic matter removal and sulfate conversion to sulfide were analyzed. Finally, a kinetic study was conducted to determine sulfate conversion and sulfide production reaction rates. A first-order model was applied to determine the reaction rates for sulfate and sulfide. Microorganisms employed for bioremediation techniques, like *Pseudomonas azotoformans*, *Desulfovibrio*, and *Methanolinea* sp., were identified in the anaerobic sludge. The decrease in COD/SO2− 4 ratio did not negatively impact the overall efficiencies in the reactor in terms of COD and sulfate removal and sulfide production, reaching values of 76.54%, 81.53%, and 268.84 mgS2−/L, respectively. Sulfidogenic activity was higher under higher sulfate concentrations (%H2S-COD = 55.2 for a 1.5 COD/SO2− 4 ratio). The results indicate a gradual increase in sulfidogenic activity; therefore, sulfate-reducing conditions were attained in the system.
Palabras claves	Sulfate-reduction, sulfidogenic activity, sulfate-rich wastewater, microbial diversity, reaction rates.

Revista	**MATERIALS RESEARCH EXPRESS**
ISSN	2053-1591
DOI	https://doi.org/10.1088/2053-1591/ad48e0

Título del Artículo	Systematic analysis of the gallium ions and structure-directing agents in the preparation of NiW HDS catalysts over mixed oxides of Al_2O_3-TiO_2
Autores e instituciones de adscripción	M. A. Guzmán Cruz [1,2]; J. G. Pacheco Sosa [2]; L. Morales de la Garza [3]; A. I. Gochi Bautista [4]; J. A. Medina Cervantes [3]; E. D. Gutiérrez López [3]; S. Fuentes Moyado [3]; J. N. Díaz de León [3] [1] Div. Acad. Multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, Carr. Estatal Libre Villahermosa ComalcalcoKM.27+000s/ nRancheríaRiberaAlta, C.P.86205, JalpadeMéndez, Tabasco, Mexico [2] Div. Acad. Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Carr. Cunduacán-Jalpa KM. 1 Col. La Esmeralda, C. P. 86690, Cunduacán, Tabasco, Mexico [3] Universidad Nacional Autónoma de México, Centro de Nanociencias y Nanotecnología, Km.107, C.P.22800, Ensenada, Baja California, Mexico [4] Facultad de Ingeniería Química, Universidad Michoacana de San Nicolás de Hidalgo, Ciudad Universitaria, 58060, Morelia, Michoacán, Mexico
Resumen	In this study, we prepared Al_2O_3-TiO_2 (AT) mixed oxides to synthesize NiW catalysts for sulfur removal reactions. The AT support samples were prepared with various surfactants. Additionally, gallium atoms (2.4 wt%) were introduced as an additive to coat the outer surface layers of AT support that lacked Al^{3+} or Ti^{2+} cations. Characterization results showed substantial differences in textural properties, chemical composition, and surface acidity. The x-ray Photoelectron Spectroscopy (XPS) and High-Resolution Transmission Electron Microscopy (HR-TEM) results demonstrated that the NiW/AT-L-Ga sample has a better combination of dispersion, sulfidation, and promotion among materials. The sulfided NiW/ AT-L-Ga catalyst had the highest catalytic activity. After incorporating Ga, XPS observed that the activity could be associated with an increase in the NiWS active phase; however, including a surfactant in the synthesis of the support allowed an increase in the amount of NiWS phase. The active phase was modeled considering the HR-TEM results for the slab length, revealing the atoms at the border susceptible to promotion
Palabras claves	Mixedoxides; hydrodesulfurization; alumina; Titania; sulfides

Revista	**REVISTA MEXICANA DE TRASTORNOS ALIMENTARIOS**
ISSN	2007-1523
DOI	10.22201/fesi.20071523e.2024.2.841
URL	https://www.medigraphic.com/pdfs/trastornos/mta-2024/mta242i.pdf
Título del Artículo	Systemic activation of dopamine D2-like receptors decreases food intake in rats
Autores e instituciones de adscripción	Tejas Juárez, Juan Gabriel [1]; Cruz Trujillo, Refugio [2,3]; Díaz Gandarilla, José Alfredo [1] Escartín Pérez, Rodrigo Erick [4]; Florán-Garduño, Benjamín [5] [1] División Académica Multidisciplinaria de Comalcalco. Universidad Juárez Autónoma de Tabasco. Comalcalco, Tabasco, México. [2] Escuela de Ciencias Químicas Ocozocoautla. Universidad Autónoma de Chiapas (UNACH), Ocozocoautla de Espinosa, Chiapas, México. [3] Departamento de Químicos Farmacobiólogos. Universidad Pablo Guardado Chávez (UPGCH), Tuxtla Gutiérrez, Chiapas, México. [4] División de Investigación y Posgrado, Universidad Nacional Autónoma de México, FES-Iztacala, Tlalnepantla, México [5] Departamento de Fisiología, Biofísica y Neurociencias, CINVESTAV-IPN, México
Resumen	Mexico is one of the top five countries in the world in terms of obesity rates. Obesity is a well-established risk factor for various health issues, including cardiovascular diseases, type II Diabetes Mellitus, cancer, reproductive complications, and psychological disturbances. As dopamine regulates eating behavior, it is crucial to investigate how dopaminergic receptors can improve pharmacological interventions against obesity. Thus, this study aimed to examine the effects of pharmacological systemic activation of D2-like dopamine receptors on standard food intake and satiety expression. Male Wistar rats weighing between 220-240 g were administered subcutaneous doses of 0.03, 0.1, or 0.3 mg/kg of quinpirole, a D2-like receptor agonist, at the beginning of the dark phase of the light/dark cycle. Over two hours, we evaluated standard food intake and behavioral satiety sequence (SSC). Our results indicated that doses of 0.03 and 0.1 mg/kg reduced food intake without affecting postprandial satiety expression. However, the dose of 0.3 mg/kg destabilized SSC, preventing the expression of satiety due to a motor effect. Therefore, we suggest that low doses of quinpirole may be a viable treatment option for obesity without affecting postprandial satiety expression
Palabras claves	Behavioral Satiety Sequence, Dopamine, D2-like family receptors, feeding behavior, energy homeostasis

Revista	**BRAIN RESEARCH**
ISSN	1872-6240
DOI	https://doi.org/10.1016/j.brainres.2023.148667
Título del Artículo	T+C11:C55he association of cytokines genes IL-6 and IL-10 with the susceptibility to schizophrenia: A systematic review and meta-analysis
Autores e instituciones de adscripción	Thelma Beatriz González Castro [1]; Carlos Alfonso Tovilla Zárate [2]; Isela Esther Juárez Rojop [3]; Yazmín Hernández Díaz [1]; María Lilia López Narváez [4]; Rosa Felicita Ortiz Ojeda [1] [1] División Académica Multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, Jalpa de Méndez, Tabasco, México [2] División Académica Multidisciplinaria de Comalcalco, Universidad Juárez Autónoma de Tabasco, Comalcalco, Tabasco, México [3] División Académica de Ciencias de la Salud, Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México [4] Hospital Chiapas "Dr. Jesús Gilberto Gómez Maza", Tuxtla Gutiérrez, Chiapas, México
Resumen	Cytokines are among the important effectors and messenger molecules for restoring the homeostasis tissue after an inflammatory response. The association between IL-6 and IL-10 genes polymorphisms with the schizophrenia susceptibility have yielded controversial results. To reconcile the results, a systematic review followed by meta-analysis was performed to assess the association. We carried out literature searches of PubMed, Scopus, EBSCO, and Web of Sciences databases. Pooled odds ratios (ORs) and 95% confidence intervals (95% CIs) were calculated to assess the strength of the association. Subgroup analysis, heterogeneity analyses, and publication bias were also calculated in the meta-analysis. A total of 22 case-control studies, consisting of 4,993 schizophrenic patients and 5,195 healthy controls, were included in the meta-analysis. The meta-analysis suggests that the IL-6 rs1800795 polymorphism displays a protective role against schizophrenia, while the IL-10 rs1800896 and rs1800872 polymorphisms confer an increased risk of schizophrenia. Similar results were found in subgroup analysis by ethnicity. We did not find association between IL-10 rs1800871 polymorphism and schizophrenia susceptibility. Finally, this meta-analysis suggested that the dysregulation of cytokines could lead to the pathogenesis of the schizophrenia.
Palabras claves	Association; Inflammation; Pathogenesis; Polymorphism.

Revista	**DATA AND METADATA**
ISSN	1744-2621
DOI	https://doi.org/10.56294/dm2023133
Título del Artículo	Technological disinformation: factors and causes of cybernaut identity theft in the digital world
Autores e instituciones de adscripción	Gilberto Murillo González [1]; Germán Martínez Prats [2]; Verónica Vázquez Vidal [3] [1] Universidad Juárez Autónoma de Tabasco. México
Resumen	The contribution of technology in the development of our daily activities has taken a giant step in the dependence of the citizen-technology-society with the integration of the Internet without glimpsing aborder. It is therefore necessary to safeguard personal information if you have an active digital life. The identification of the factors and causes that lead to identity theft is a requirement for the technical and operational literacy of citizens, who are easy victims. This article aims to analyze some aspects of causes and factors of identity theft of citizens of the municipality of the center of the State of Tabasco. A quantitative instrument was designed, applied via Internet to a population of 3,158. The results show that citizens are unaware of several aspects of security in the environment of digital services, which, depending on gender, age and level of education, are captive in some scenario of digital insecurity.
Palabras claves	Cybersecurity; Knowledge Society; Digital Ecosystem; Business Intelligence; E-Commerce.

Revista	**SUMA DE NEGOCIOS**
ISSN	2027-5692
DOI	https://doi.org/10.14349/sumneg/2024.V15.N32.A6
Título del Artículo	The 4Fs model of digital marketing: Its impact on brand positioning
Autores e instituciones de adscripción	Vanessa del Carmen Díaz Landero [1]; Edith Georgina Surdez Pérez [2]; Roberto Reyes Cornelio [3] [1] Máster en Administración y Dirección Estratégica. Profesora, Universidad Mundo Maya, México [2] Doctora en Gestión Estratégica y Políticas de Desarrollo. Profesora, Universidad Juárez Autónoma de Tabasco, México [3] Doctor en Dirección y Mercadotecnia, Profesor, Universidad Juárez Autónoma de Tabasco. México Correo electrónico.
Resumen	**Introduction/Objective:** The 4Fs of digital marketing - flow, functionality, feedback, and loyalty - enhance effective and appealing communication across digital platforms. This study aims to evaluate the application of the 4Fs model in a Mexico-based ecotourism hotel, validating its measurement framework and analyzing the relationship between these variables and brand positioning. **Methodology:** A quantitative, non-experimental, cross-sectional, descriptive, and correlational approach was employed. The study surveyed 280 followers of the company's Facebook page, using a 21-item questionnaire. Confirmatory factor analysis with maximum likelihood estimation assessed construct validity, while Cronbach's alpha coefficient measured reliability. **Results:** Pearson correlation analysis revealed a strong, significant relationship between the 4Fs of digital marketing and brand positioning: flow (0.808), functionality (0.829), feedback (0.885), and loyalty (0.864). All correlations were statistically significant at the 0.01 level (two-tailed). **Conclusions:** The study affirmed that the company's efforts on its websites to foster pleasant user interaction and effective information retrieval significantly contribute to creating memorable brand associations.
Palabras claves	Digital marketing; brand positioning; 4Fs model; communication; social media; digital resources.

Revista	**PHARMACEUTICALS**
ISSN	eISSN: 1424-8247
DOI	https://doi.org/10.3390/ph17020258
Título del Artículo	The Autoxidized Mixture of --Epicatechin Contains Procyanidins and Shows Antiproliferative and Apoptotic Activity in Breast Cancer Cells
Autores e instituciones de adscripción	Yazmín Osorio Cruz [1]; Ivonne María Olivares Corichi [1]; José Correa Basurto [2]; José Arnold González Garrido [3]; Fernando Pereyra Vergara [1]; Gildardo Rivera [4]; José Rubén García Sánchez [1] [1] Laboratorio de Oncología Molecular y Estrés Oxidativo de la Escuela Superior de Medicina, Instituto Politécnico Nacional, Plan de San Luis y Díaz Mirón, s/n, Col. Casco de Santo Tomas, Ciudad de México 11340, Mexico [2] Laboratorio de Diseño y Desarrollo de Nuevos Fármacos e Innovación Biotecnológica, Escuela Superior de Medicina, Instituto Politécnico Nacional, Plan de San Luis y Díaz Mirón, s/n, Col. Casco de Santo Tomas, Ciudad de México 11340, Mexico [3] Laboratorio de Bioquímica y Biología Molecular, Centro de Investigación de Ciencia y Tecnología Aplicada de Tabasco (CICTAT), División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Carretera Cunduacán-Jalpa KM. 1 Colonia la Esmeralda, Villahermosa 86690, Mexico [4] Laboratorio de Biotecnología Farmacéutica, Centro de Biotecnología Genómica, Instituto Politécnico Nacional, Reynosa 88710, Mexico
Resumen	For this study, procyanidins generated through the autoxidation of (-)-epicatechin (Flavan-3-ol) under mildly acidic conditions (pH = 6.0) were characterized with ultra high-performance liquid chromatography (UHPLC) coupled with tandem mass spectrometry (MS/MS). Two procyanidins (types A and B) and a mix of oligomers were generated through the autoxidation of (-)-epicatechin. The antiproliferative activity of this mixture of procyanidins on MDA-MB-231, MDA-MB-436, and MCF-7 breast cancer cells was evaluated. The results indicate that the procyanidin mixture inhibited the proliferation of breast cancer cells, where the activity of the procyanidin mixture was stronger than that of (-)-epicatechin. Moreover, the mechanism underlying the antiproliferative activity of procyanidins was investigated. The resulting data demonstrate that the procyanidins induced apoptotic cell death in a manner selective to cancerous cells. In particular, they caused the activation of intrinsic and extrinsic apoptotic pathways in the breast cancer cells. The findings obtained in this study demonstrate that the generation of procyanidins *in vitro* by the autoxidation of (-)-epicatechin has potential for the development of anti-breast cancer agents.
Palabras claves	Procyanidins; breast cancer; apoptosis; antiproliferative activity; (-)-epicatechin

Revista	**AMERICAN JOURNAL OF TROPICAL MEDICINE AND HYGIENE**
ISSN	1476-1645
DOI	https://doi.org/10.4269/ajtmh.23-0913
Título del Artículo	The Crisis of Macrolide Resistance in *Pneumococci* in Latin America
Autores e instituciones de adscripción	Carolina Viteri Dávila [1]; Diana Morales Jadán [1]; Aidan Creel [2]; Ana G Jop Vidal [3]; Xavier M Boldo [4]; Ismar A Rivera Olivero [1]; Consuelo Bautista Muñoz [5]; Babek Alibayov [3]; Miguel Ángel García Bereguiain [1]; Jorge E Vidal [3,6] [1] One Health Research Group, Universidad de Las Américas, Quito, Ecuador. [2] Summer Undergraduate Research Experience Program, School of Graduate Studies in the Health Sciences, University of Mississippi Medical Center, Jackson, Mississippi. [3] Department of Cell and Molecular Biology, University of Mississippi Medical Center, Jackson, Mississippi. [4] Research Center, Health Sciences Academic Division, Juarez Autonomous University of Tabasco, Villahermosa, Mexico. [5] Laboratory of Biotechnology, Colegio de Postgraduados Campus Tabasco, Cardenas, Mexico. [6] Center for Immunology and Microbial Research, University of Mississippi Medical Center, Jackson, Mississippi.
Resumen	Macrolide antibiotics are recommended for the treatment of pneumococcal pneumonia and invasive pneumococcal disease (IPD). Prior to 2000, □10% of *Streptococcus pneumoniae* strains isolated from IPD cases in Latin American countries were resistant to macrolides. The mechanism of resistance to macrolides was associated mainly with the efflux pump known as the macrolide efflux genetic assembly, since most pneumococcal strains carried the *mef(A/E)* gene, whereas <6% strains carried both the methylase gene *ermB* and *mef(A/E)*. In the first decade of this century, a significant increase in the prevalence of macrolide resistance was observed in pneumococcal strains in both Mexico and Peru. Approximately 30% of *S. pneumoniae* strains in these countries were already resistant to erythromycin, while the prevalence in Colombia, Argentina, and Brazil remained below 10%. During the last decade, we have been experiencing a worrisome increase in pneumococcal strains carrying resistance to macrolides, with a prevalence of up to 80% for resistance to erythromycin. The mechanism for disseminating macrolide resistance has evolved. Currently, more than 55% of invasive *S. pneumoniae* macrolide-resistant strains carry both the *ermB* and the *mef(A/E)/mel* genes. Lessons learned from the current macrolide resistance crisis in Latin America can inform interventions in other regions.
Palabras claves	N/A

Revista	**REVISTA MEXICANA DE FÍSICA E**
ISSN	2683-2216
DOI	https://doi.org/10.31349/RevMexFisE.21.010214
Título del Artículo	The free fall in three physics theories
Autores e instituciones de adscripción	Edgar Luis Luna Hernández [1]; Jorge Alejandro Bernal Arroyo [1]; Luis Enrique Ramón Pedrero [1] [1]Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias Básicas
Resumen	This paper explores the interplay between Classical Mechanics, Relativistic Mechanics, and Quantum Mechanics through an analysis of the free fall phenomenon. We investigate the probability density functions and corresponding plots in each theory, alongside calculating the expected values of position and momentum. By observing the behavior of these results as they approach the classical limit, we confirm the hypothesis that these theories can be connected through their probability density functions. Furthermore, we discuss the validity of the correspondence principle in Quantum Mechanics, while also examining, in a non-rigorous manner, the validity of the weak equivalence principle within each of the aforementioned theories.
Palabras claves	Asymptotic quantum mechanics; correspondence principle; probability density; relativistic form of Newton's second law; weakequivalence principle

Revista	**ANIMALS**
ISSN	2076-2615
DOI	https://doi.org/10.3390/ani14182663
Título del Artículo	The Indigenous Probiotic *Lactococcus lactis* PH3-05 Enhances the Growth, Digestive Physiology, and Gut Microbiota of the Tropical Gar (*Atractosteus tropicus*) Larvae
Autores e instituciones de adscripción	Graciela María Pérez Jiménez [1]; Carina Shianya Álvarez Villagómez [1]; Marcel Martínez Porchas [2]; Estefanía Garibay Valdez [2]; César Antonio Sepúlveda Quiroz [1,3]; Otilio Méndez Marín [1]; Rafael Martínez García [1]; Ronald Jesús Contreras [1]; Carlos Alfonso Álvarez González [1]; Susana del Carmen de la Rosa García [4] [1] Laboratorio de Fisiología en Recursos Acuáticos (LAFIRA), División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Carretera Villahermosa-Cárdenas Km. 0.5, Villahermosa 86039, Tabasco, Mexico [2] Centro de Investigación en Alimentación y Desarrollo, A.C. Biología de Organismos Acuáticos, Hermosillo 83304, Sonora, Mexico [3] Instituto Tecnológico de Villahermosa, Tecnológico Nacional de México, Carretera Villahermosa-Frontera, Km. 3.5, Ciudad Industrial, Villahermosa 86010, Tabasco, Mexico [4] Laboratorio de Microbiología Aplicada (LABMIA), División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Carretera Villahermosa-Cárdenas Km. 0.5, Villahermosa 86039, Tabasco, Mexico
Resumen	Probiotics in aquaculture hold promise for enhancing fish health and growth. Due to their increased specificity and affinity for their host, indigenous probiotics may offer isolated and potentially amplified benefits. This study investigated the effects of *Lactococcus lactis* PH3-05, previously isolated from adults of tropical gar (*Atractosteus tropicus*), on the growth, survival, digestive enzyme activity, intestinal morphology, expression of barrier and immune genes, and intestinal microbiota composition in the larvae of tropical gar. Larvae were fed with live *L. lactis* PH3-05 concentrations of 10^4, 10^6, and 10^8 CFU/g for 15 days alongside a control diet without probiotics. Higher concentrations of *L. lactis* PH3-05 (10^6 and 10^8 CFU/g) positively influenced larval growth, increasing hepatocyte area and enterocyte height. The 10^6 CFU/g dose significantly enhanced survival (46%) and digestive enzyme activity. Notably, the 10^8 CFU/g dose stimulated increased expression of *muc-2* and *il-10* genes, suggesting enhanced mucosal barrier function and anti-inflammatory response. Although *L. lactis* PH3-05 did not significantly change the diversity, structure, or Phylum level composition of intestinal microbiota, which was constituted by Proteobacteria, Bacteroidota, Chloroflexi, and Firmicutes, an increase in *Lactobacillus* abundance was observed in fish fed with 10^6 CFU/g, suggesting enhanced probiotic colonization. These results demonstrate that administering *L. lactis* PH3-05 at 10^6 CFU/g promotes growth, survival, and digestive health in *A. tropicus* larvae, establishing it as a promising indigenous probiotic candidate for aquaculture applications.
Palabras claves	Probiotics; tropical gar; microbiome; physiology; gene expression; *Lactococcus lactis*

Revista	**JOURNAL OF MORPHOLOGY**
ISSN	1097-4687
DOI	https://doi.org/10.1002/jmor.21694
Título del Artículo	The male reproductive cycle of the brown basilisk *Basiliscus vittatus* (Squamata: Corytophanidae) from Tabasco, Southern Mexico
Autores e instituciones de adscripción	José Rodrigo Rivera López [1]; Aaron Alejandro Torres Martínez [1,2]; Arlette Hernández Franyutti [1]; Mari Carmen Uribe [3]; Kevin Gribbins [4] [1] Laboratorio de Biología de la Reproducción Animal, División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Tabasco, Mexico. [2]Universidad Nacional Autónoma de México {2} Department of Marine Biosciences, Graduate School of Marine Science and Technology, Tokyo University of Marine Science and Technology, Tokyo, Japan. [3] Laboratorio de Biología de la Reproducción Animal, Departamento de Biología Comparada, Facultad de Ciencias, Universidad Nacional Autónoma de México, Mexico City, Mexico. [4] Department of Biology, University of Indianapolis, Indianapolis, Indiana, USA.
Resumen	We used histological and morphometric methods to study the testis and associated glands, including the epididymis, ductus deferens, and renal sexual segment (RSS), of specimens of *Basiliscus vittatus* sampled from Tabasco, Mexico (17.5926° N, 92.5816° W). Samples were collected throughout 1 year, which included the dry (February to May) and rainy (June to January) seasons. Spermatogenesis in *B. vittatus* is active throughout the year, but a significant increase in the testicular volume, diameters of seminiferous tubules, height of the germinal epithelium, spermiogenesis, and released spermatozoa

Resumen	occur in the dry season. During the rainy season, all aforementioned parameters decreased except the secretory activity of the epididymis and the RSS, which increased concomitant with an increase of the spermatozoa population within the ductus deferens. These data strongly suggest that *B. vittatus* reproduce year-round, but males exhibit a peak in spermatogenic activity during the dry season and a peak in insemination and/or copulation at the beginning of the rainy season. We highlight the importance of analyzing not only the testis but also accessory ducts and glands when determining the reproductive cycles of reptiles. The reproductive cycle of *B. vittatus* is discussed in relation to the environmental conditions of Southern Mexico and is compared to that of other squamates.
Palabras claves	Ductus deferens; epididymis; reproductive biology; sexual segment of the kidney; spermatogenesis; tropical lizard.

Revista	**ENVIRONMENTAL MONITORING AND ASSESSMENT**
ISSN	1573-2959
DOI	10.1007/s10661-024-13201-0
Título del Artículo	The radiological hazard and potential for generating acid mine drainage from a coal tailings dam
Autores e instituciones de adscripción	Felipe de Jesús López Saucedo [1]; José Alberto Batista Rodríguez [1]; Yuri Almaguer Carmenates [1]; Ramón Yosvanis Batista Cruz [1]; Laura Lorena Díaz Flores [3]; Karen Larissa Ramos Méndez [1] [1] Escuela Superior de Ingeniería, Universidad Autónoma de Coahuila, Blvd. Licenciado Adolfo López Mateos S/N, Nueva Rosita, Coahuila, México. [2] División Académica de Ingeniería y Arquitectura, Universidad Juárez Autónoma de Tabasco, Carretera Cunduacán-Jalpa de Méndez, Cunduacán, Tabasco, México.
Resumen	The aim of this study was to analyze the radiological hazards and the potential for generating acid mine drainage from the fine coal waste commonly stored in tailings dams. The magnetic susceptibility, natural gamma radioactivity, and net neutralization potential of the tailings are characterized. The results show that the fine coal waste has a uranium equivalent concentration (eU) of 46-48 Bq kg^{-1}, which is 37.14% higher than the world average, and 39-47 Bq kg^{-1} equivalent concentration of thorium (eTh), which is 56.66% higher than the world average. Also, the absorbed gamma radiation dose rate is higher than the world average. Acid-base balance tests indicate that the net neutralization potential ranged from 0.38 to 2.44. The physical properties indicate a possible radiological risk, while the chemical properties show that generating and non-generating acid drainage can coexist in the fine dam tailings.
Palabras claves	Acid mine drainage; Coal tailings; Dams; Natural radioactivity; Net neutralization potential; Radiological indices.

Revista	**ACTUALIDAD JURÍDICA IBEROAMERICANA**
ISSN	2386-4567
URL	https://dialnet.unirioja.es/servlet/articulo?codigo=9616808
Título del Artículo	The Regulations in the State of Tabasco, Mexico, as a Public Policy to Defense Vulnerable Groups in Gestation by Substitution
Autores e instituciones de adscripción	Gisela María Pérez Fuentes [1]; Karla Cantoral Domínguez [1] [1] Universidad Juárez Autónoma de Tabasco
Resumen	La legislación que ha permitido la gestación subrogada en México, con especial referencia al estado de Tabasco se desarrolló desde 1997 en un matiz contractual de carácter patrimonialista en el cual las dos partes han sido, padres o madres contratantes y gestantes, en franca desventaja para las mujeres gestantes, que no tienen una autonomía ni un plano de igualdad con relación a la otra parte para emitir un verdadero consentimiento. La libertad de configuración legislativa que se ha basado en disímiles investigaciones realizadas en el Estado de Tabasco ha considerado el futuro de políticas públicas para los grupos vulnerables involucrados que deben ser protegidos. Este trabajo explica de qué forma se permite el

Resumen	desarrollo científico a favor de la humanidad y al mismo tiempo se ponderan derechos entre los que es necesario privilegiar los de las mujeres gestantes y los de las niñas y niños nacidos de estas técnicas en cuanto no sólo a la identidad sino a su futuro bienestar.
Palabras claves	Gestación por sustitución; voluntad procreacional; acto jurídico normativo; derecho a la identidad: madre gestante.

Revista	**BIOLOGICAL JOURNAL OF THE LINNEAN SOCIETY**
ISSN	1095-8312
DOI	https://doi.org/10.1093/biolinnean/blad157
Título del Artículo	The relationship between wing morphology and foraging guilds: Exploring the evolution of wing ecomorphs in bats
Autores e instituciones de adscripción	Sandra M. Ospina Garcés [1,2]; Verónica Zamora Gutiérrez [3]; Juan Manuel Lara Delgado [4]; Mercedes Morelos Martínez [1]; Rafael Ávila Flores [5]; Anikó Kurali [1,6]; Jorge Ortega [7]; Celia Isela Selem Salas [8]; M. Cristina MacSwiney G [1] [1] Centro de Investigaciones Tropicales, Universidad Veracruzana, José María Morelos No. 44 y 46. Col. Centro, CP 91000, Xalapa, Veracruz, México [2] Centro de Investigación en Biodiversidad y Conservación, Universidad Autónoma del Estado de Morelos, Avenida Universidad 1001, Col. Chamilpa, CP 62209 Cuernavaca, Morelos, Mexico [3] CONACYT—Centro Interdisciplinario de Investigación para el Desarrollo Integral Regional Unidad Durango (CIIDIR), Instituto Politécnico Nacional, Durango, Mexico [4] Maestría en Ciencias Biológico-Agropecuarias, Universidad Autónoma de Nayarit, Km 9, carretera Tepic—Compostela, Xalisco, Nayarit, Mexico [5] División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Villahermosa, Mexico [6] Department of Nature Conservation Fertő-Hanság National Park Directory 9435 Sarród, Rév-Kócsagvár, Hungary [7] Departamento de Zoología, Escuela Nacional de Ciencias Biológicas, Instituto Politécnico Nacional, Ciudad de México, Mexico [8] Campus de Ciencias Biológicas-Agropecuarias, Universidad Autónoma de Yucatán, Mérida, Mexico
Resumen	Different aspects of foraging strategies in bats have been studied to understand the evolution of flight in mammals. General descriptors of wing morphology associated with flight performance, such as aspect ratio and wing loading, allowed us to describe ecomorphs determined by the dietary preferences of bat species. However, the role of wing shape divergence in the evolution of bat foraging strategies remains little explored. We adopted a two-dimensional geometric morphometric approach to quantify the wing shape and size variation explained by phylogenetic relatedness (families) and to evaluate the covariance between foraging guilds and flight descriptors based on phylogenetic comparative methods in 69 Neotropical bat species. We tested whether wing morphology represents a reliable marker of the foraging guild, and we explored the rate of shape evolution among foraging guilds to describe divergent trends that could explain the morphological and ecological diversification. Our results suggest that the earliest bat ancestor was an aerial forager occupying the edge space, which is congruent with the observed evolution of wing shape from an edge space wing morphology. The relationship between wing shape and foraging space defines wing ecomorphs, which probably evolved early in bat ancestors; a process other than convergence could explain this association.
Palabras claves	Chiroptera, bat evolution, ecomorphology, Mexico, *Phyllostomidae*, wing shape, geometric morphometrics, foraging space

Revista	**NANO-STRUCTURES AND NANO-OBJECTS**
ISSN	2352-5088
DOI	https://doi.org/10.1016/j.nanoso.2024.101165
Título del Artículo	The role of Ga and Y on binary Al_2O_3-Y_2O_3 and Al_2O_3-Ga_2O_3 mixed oxides nanoparticles towards potential Ni water-gas shift catalysts
Autores e instituciones de adscripción	M.C. Ortiz-Domínguez [1,2]; A. Solís García [2]; A.M. Venezia [3]; S. Jiménez Lam [4]; S. Fuentes Moyado [2]; R. Ponce Pérez [2]; J. Guerrero Sánchez [2]; J.G. Pacheco Sosa [1]; J.N. Díaz de León [2] [1] División académica multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, Carr. Estatal libre Villahermosa-Comalcalco, RIA. Rivera alta Jalpa de Méndez, Tabasco, Mexico

Autores e instituciones de adscripción	[2] Universidad Nacional Autónoma de México, Centro de Nanociencias y Nanotecnología México, Carretera Tijuana-Ensenada, Pedregal Playitas, Ensenada, B.C. 22860, México [3] Instituto per lo Studio dei Material Nanostrutturati, Palermo 90146, Italy [4] Facultad de Ciencias Químico Biológicas, Universidad Autónoma de Sinaloa, Josefa Ortiz de Domínguez, 80013, Ciudad Universitaria, Culiacán, Sinaloa, Mexico
Resumen	This work focuses on the study of binary Al_2O_3-Y_2O_3-x and Al_2O_3-Ga_2O_3-x mixed oxides with varying Y_2O_3 or Ga_2O_3 nominal loading (x=25, 50) prepared by hydrothermal synthesis assisted by Triton X-100. The mixed oxides were used to prepare Ni-based (5 wt%) catalysts for the Water Gas Shift Reaction. The Al_2O_3 sample presented urchin-like hollow nanosphere morphology, which evolved to solid nanospheres with Y_2O_3 or Ga_2O_3 in the mixed oxides. The physicochemical characterization indicated good integration of the mixed oxides, espe cially on the low-content additive oxides. The theoretical results confirmed that Ga goes deeper into the alumina matrix than Y, partially explaining the XPS and HRTEM results in which the Ni dispersion was better in the Ni/ AlGa-x samples. The FTIR in-situ measurements of the reaction allowed us to propose that the reaction occurs minimally through the carbonyl mechanism at low temperatures (300 ◦C).
Palabras claves	WGS; Mixed oxides: Urchin-like; Nanoparticles; XPS

Revista	**SUSTAINABILITY**
ISSN	eISSN:2071-1050
DOI	https://doi.org/10.3390/su16010199
Título del Artículo	The Use of Pre-Wetting to Improve the Mechanical Behavior of Masonry Mortar elaborated with Crushed Oyster Shell
Autores e instituciones de adscripción	René Sebastián Mora Ortiz [1]; Ebelia del Ángel Meraz [1]; Sergio A. Díaz [1]; Emmanuel Munguía Balvanera [1]; Francisco Magaña Hernández [1]; Justino Alavez Ramírez [2]; Mayra Agustina Pantoja Castro [1]; Jazmín del Rosario Torres Hernández [1] [1] División Académica de Ingeniería y Arquitectura (DAIA), Universidad Juárez Autónoma de Tabasco, Carretera Cunduacán-Jalpa de Méndez km. 1, Cunduacán 86690, Tabasco, Mexico [2] División Académica de Ciencias Básicas (DACB), Universidad Juárez Autónoma de Tabasco (UJAT), Carretera Cunduacán-Jalpa de Méndez km. 1, Cunduacán 86690, Tabasco, Mexico
Resumen	In this research, the use of the pre-wetting technique is proposed as an ecological alternative to reduce water absorption in waste oyster shells used in the production of masonry mortar as a partial substitute for natural sand. An experimental study was conducted to assess the properties in both the fresh and hardened states of masonry mortars. Two mortar groups were prepared based on a control mixture, with natural aggregate replaced by crushed oyster shell (COS) in varying proportions. In one group, the COS was pre-wetted, while in the other group, the COS was used at its natural moisture content. The experimental results demonstrated that the pre-wetting process aided in reducing the water–cement ratio (w/c) in the mortar mixture, thereby improving its properties. In both mortar groups, favorable results were observed with respect to capillary water absorption. Although the compressive strength was affected by the incorporation of COS, pre-wetted mortars with substitutions of up to 30% achieved the reference value established in this research. The pre-wetting process proves to be a straightforward and cost-effective technique; it is environmentally friendly and will contribute to decreasing the accumulation of COS in landfills, thereby safeguarding natural material reserves.
Palabras claves	Pre-wetting; sustainable construction; oyster shell; recycling

Revista	**BIOLOGY OPEN**
ISSN	eISSN: 2046-6390
DOI	https://doi.org/10.1242/bio.060223
Título del Artículo	Thermal tolerance in an extremophile fish from Mexico is not affected by environmental hypoxia
Autores e instituciones de adscripción	Korbinian Pacher [1,2]; Natalia Hernández Román [3]; Alejandro Juárez López [3]; Jesús Emmanuel Jiménez Jiménez [3]; Juliane Lukas [1,2]; Yunus Sevinchan [4]; Jens Krause [1,2,4]; Lenin Arias Rodríguez [3]; David Bierbach [1,2,4]

Autores e instituciones de adscripción	[1] Department of Biology and Ecology of Fishes, Leibniz-Institute of Freshwater Ecology and Inland Fisheries, 12487 Berlin, Germany. [2] Faculty of Life Sciences, Albrecht Daniel Thaer-Institute, Humboldt University of Berlin, 10115 Berlin, Germany. [3] División Académica de Ciencias Biológicas, Universidad Juárez Autónoma Tabasco, 86150 Villahermosa, Mexico. [4] Science of intelligence cluster has the state of a department at TU Berlin, Excellence Cluster Science of Intelligence, Technische Universität Berlin, 10587 Berlin, Germany.
Resumen	The thermal ecology of ectotherm animals has gained considerable attention in the face of human-induced climate change. Particularly in aquatic species, the experimental assessment of critical thermal limits (CT_{min} and CT_{max}) may help to predict possible effects of global warming on habitat suitability and ultimately species survival. Here we present data on the thermal limits of two endemic and endangered extremophile fish species, inhabiting a geothermally heated and sulfur-rich spring system in southern Mexico: The sulfur molly (*Poecilia sulphuraria*) and the widemouth gambusia (*Gambusia eurystoma*). Besides physiological challenges induced by toxic hydrogen sulfide and related severe hypoxia during the day, water temperatures have been previously reported to exceed those of nearby clearwater streams. We now present temperature data for various locations and years in the sulfur spring complex and conducted laboratory thermal tolerance tests (CT_{min} and CT_{max}) both under normoxic and severe hypoxic conditions in both species. Average CT_{max} limits did not differ between species when dissolved oxygen was present. However, critical temperature (CT_{max}=43.2°C) in *P. sulphuraria* did not change when tested under hypoxic conditions, while *G. eurystoma* on average had a lower CT_{max} when oxygen was absent. Based on this data we calculated both species' thermal safety margins and used a TDT (thermal death time) model framework to relate our experimental data to observed temperatures in the natural habitat. Our findings suggest that both species live near their thermal limits during the annual dry season and are locally already exposed to temperatures above their critical thermal limits. We discuss these findings in the light of possible physiological adaptions of the sulfur-adapted fish species and the anthropogenic threats for this unique system.
Palabras claves	Extremophile fish; Temperature tolerance; Thermal limit; Thermal tolerance.

Revista	**INTERNATIONAL JOURNAL OF PSYCHIATRY IN MEDICINE**
ISSN	0091-2174
DOI	https://doi.org/10.1177/00912174231199216
Título del Artículo	To the bone: Prevalence and correlates of depression and anxiety among orthopedic residents in Mexico
Autores e instituciones de adscripción	Ana Fresán [1]; Rebeca Robles García [2]; María Yoldi Negrete [1]; Diana Guízar Sánchez [3]; Carlos Alfonso Tovilla Zárate [4] [1] Subdirección de Investigaciones Clínicas, Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz, Mexico. [2] Centro de Investigación en Salud Mental Global, Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz, Mexico. [3] Departamento de Fisiología de la Facultad de Medicina, Universidad Nacional Autónoma de México, Mexico. [4] División Académica Multidisciplinaria de Comalcalco, Universidad Juárez Autónoma de Tabasco, Mexico.
Resumen	**Objective:** Examining orthopedic residents in Mexico, researchers explore the relationship between the presence of depressive or anxious symptoms and the degree of perfectionism, perceived work-related distress, and involvement in the care of patient(s) who died. **Methods:** This was a cross-sectional online survey of 642 orthopedic residents from October 2019 to April 2021. **Results:** Of orthopedic residents contacted, 50.6% responded rate (70.9% male, average age 29.8 years). A total of 12.5% reported significant depressive symptoms and 18.4% reported significant anxious symptoms. On a scale from 0-100, the mean score of perceived work-related distress was 51.9. One-third (33.6%) reported being involved in the care of patient(s) who had died. Higher levels of work-related distress and higher scores on perfectionism were associated with depressive and anxiety symptoms. In particular, being involved in the care of patient(s) who had died was associated with anxious symptoms (OR = 1.79; 95%CI = 1.18-2.72). **Conclusions:** These results highlight the need for systematic monitoring of the mental health of orthopedic residents in Mexico, particularly those who report a high level of work-related distress or perfectionism or who have recently experienced the death of a patient.
Palabras claves	Anxiety; depression; medical residency; orthopedics; patient death; perfectionism.

Revista	**VECTOR-BORNE AND ZOONOTIC DISEASES**
ISSN	0091-2174,
DOI	https://doi.org/10.1089/vbz.2023.0143
Título del Artículo	*Trypanosoma cruzi* in Wild and Synanthropic Mammals in Two Regions of Mexico: A Fieldwork and Genetic Discrete Typing Unit Review
Autores e instituciones de adscripción	José Alejandro Martínez Ibarra [1]; Brizia Oria Martínez [2]; Alba Zulema Rodas Martínez [3]; Rafael Ávila Flores [3]; Claudia Irais Muñoz García [4]; Emilio Rendon Franco [4]; Guiehdani Villalobos [4]; Fernando Martínez Hernández [2] [1] Laboratorio de Entomología Médica, Centro Universitario del Sur, Universidad de Guadalajara, Ciudad Guzmán, Mexico. [2] Departamento de Ecología de Agentes Patógenos, Hospital General "Dr. Manuel Gea González," Mexico City, Mexico. [3] División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Villahermosa, México. [4] Departamento de Producción Agrícola y Animal, Universidad Autónoma Metropolitana, Mexico City, Mexico.
Resumen	**Background:** Marsupials and rodents are the most important wild and synanthropic hosts of *Trypanosoma cruzi* due to the high frequency of infection, maintenance of diverse genetic populations of the parasite, and their close proximity to interact with both transmission cycles, sylvatic and peridomestic. Our aim was to identify the discrete typing units (DTU) of *T. cruzi* from different wild and synanthropic hosts in two regions of Mexico and to carry out a review of historical data focusing on current knowledge on the diversity and *T. cruzi* DTUs of host species. **Materials and Methods:** One hundred fifteen samples were obtained from two areas in Tabasco and Nayarit state. The presence of *T. cruzi* was evaluated by PCR. **Results:** The 12.6% (12/95) of samples from Tabasco and 65% (13/20) from Nayarit were found to be positive for parasite DNA. All the sequences analyzed were grouped in *T. cruzi* DTU I; low nucleotide diversity was observed in Tabasco (π = 0.00566, and Θ = 0.00632), while high genetic diversity was observed in Nayarit sequences, up to 8.63 (π) to 11.10 (Θ) times greater than Tabasco sequences. Genetic flow and migration between Tabasco, and Nayarit were scarce (FST = 0.37329 and Nm = 0.42), and genetic exchange was observed only between nearby areas. The bibliographic review of hosts in Mexico, together with our data, shows a heterogeneous *T. cruzi* prevalence in Chiroptera and domestic animals. For Atelidae and Canids, prevalence is generally below 25%. However, a high prevalence, greater than 25% and up to 100%, was recorded in Didelphimorphia, and Rodentia. Few studies in regions of Mexico have been described as infected with the parasite; in these, the genetic group with the highest prevalence is the DTU I. **Conclusion:** Marsupials and rodents are important reservoirs of *T. cruzi*; DTU I was frequently reported; however, recent genetic and reservoir studies have demonstrated the presence of greater diversity of genetic groups.
Palabras claves	*Trypanosoma cruzi*; genetic lineages; mammals; wild reservoirs.

Revista	**FISHES**
ISSN	eISSN: 2410-3888
DOI	https://doi.org/10.3390/fishes9010040
Título del Artículo	Tryptophan Reduces Intracohort Cannibalism Behavior in Tropical Gar (*Atractosteus tropicus*) Larvae
Autores e instituciones de adscripción	César Antonio Sepúlveda Quiroz [1,2]; Graciela María Pérez Jiménez [1]; Gloria Gertrudis Asencio Alcudia [1,2]; Omar Mendoza Porras [3]; Luis Daniel Jiménez Martínez [4]; Mario A. Galaviz Espinoza [5]; Dariel Tovar Ramírez [6]; Rafael Martínez García [1]; Carina Shianya Alvarez Villagómez [1]; Carlos Alfonso Alvarez González [1] [1] Laboratorio de Fisiología en Recursos Acuáticos, División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Carretera Villahermosa-Cárdenas Km. 0.5, Villahermosa 86039, Tabasco, Mexico [2] Tecnológico Nacional de México Campus Villahermosa, Km. 3.5 Carretera Villahermosa–Frontera, Cd. Industrial, Villahermosa 86010, Tabasco, Mexico [3] CSIRO Livestock and Aquaculture, Queensland Bioscience Precinct, 306 Carmody Rd, St Lucia 4067, Australia [4] División Académica Multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco (DAMJM-UJAT), Carretera Estatal Libre Villahermosa-Comalcalco Km. 27+000 s/n Ranchería Ribera Alta, Jalpa de Méndez 86205, Tabasco, Mexico [5] Facultad de Ciencias Marinas, Universidad Autónoma de Baja California (UABC), Ensenada 22860, Baja California, Mexico [6] Laboratorio de Fisiología Comparada y Genómica Funcional, Centro de Investigaciones Biológicas del Noroeste, La Paz 23096, Baja California Sur, Mexico

Resumen	The intracohort cannibalism present in tropical gar larvae (*A. tropicus*) generates great problems in its culture, as in other fish species around the world. The addition of tryptophan (Trp) (10, 20, and 30 g/kg) and a control diet (CD) without Trp were evaluated in *A. tropicus* larvae regarding growth, survival, cannibalism, behavior, digestive enzymatic activity, and genes related to aggressiveness and/or cannibalism in two stages: 0–13 days after hatching (DAH); and only cannibals (14–24 DAH). In the first stage, no differences were observed in growth parameters; cannibalism was lower with the use of Trp, with the lowest percentage being the 10 g/kg Trp treatment (56.75 ± 2.47%) compared to CD (64.75 ± 1.76%). In the second stage, survival was greater in 10 g/kg Trp (75.00 ± 7.07%) than in CD (23.33 ± 5.77%). Thus, cannibalism was lower with 10 g/kg Trp (20.0 ± 10.0%) compared to CD (76.66 ± 5.77%). Cannibal larvae fed with 10 g/kg Trp had a greater enzymatic activity in acid and alkaline proteases and leucine aminopeptidase, as well as the overexpression of *avpi1*, *crh*, and *htr1a* and the subexpression of *tph1*, *th*, *sstr1*, and *hdc* ($p < 0.05$). No aggressive behaviors were recorded in the larvae fed with the 10 g/kg Trp treatment, unlike those fed with CD. The use of 10 g/kg Trp improves survival and reduces cannibalism in *A. tropicus* larvae.
Palabras claves	Intracohort cannibalism; mitigation; survival; fish larvae; behavior

Revista	**PHYTOTAXA**
ISSN	1179-3163
DOI	https://doi.org/10.11646/phytotaxa.653.2.1
Título del Artículo	*Tulostoma subreticulatum Agaricomycetes*, *Agaricales*: a new species of stalked puffball from Mexico
Autores e instituciones de adscripción	Eduardo Hernández Navarro [1]; Silvia Cappello García [2] [1] Laboratorio de Micología, Instituto de Biología, Universidad Nacional Autónoma de México [2] Universidad Juárez Autónoma de Tabasco
Resumen	*Tulostoma subreticulatum* is a new species to science. This species is characterized by its small to medium-size basidiomes, tubular stoma, verrucose exoperidium with flat and angulose verrucae up to 0.8 mm, reddish-brown endoperidium, and subreticulated 3.8–5 µm basidiospores. This new species was collected in the tropical forest of Tabasco, Mexico. Description of the specimens, macroscopic images of the basidiomes, light microscopy, and scanning electron micrographs are provided. DNA extraction was carried out following a CTAB protocol. GeneBank and newly generated ITS, LSU, and Tef1α sequences were used in Maximum Likelihood and Bayesian Inference analyses. Phylogenetically, *T. subreticulatum* is related to *T. deltaconcavum* and forms a sister group from Clade 11 of the monophyletic genus *Tulostoma*. Comparisons with related sequenced and non-sequenced species are discussed. With this species, a total of 51 species of *Tulostoma* are known in Mexico
Palabras claves	Biodiversity; Taxonomy; Fungi; *Basidiomycota*; *Agaricomycetes*; *Agaricales*; *Agaricaceae*.

Revista	**JOURNAL OF MODERN POWER SYSTEMS AND CLEAN ENERGY**
ISSN	2196-5625
DOI	https://doi.org/10.35833/MPCE.2023.000461
Título del Artículo	Two-stage Transient-Stability-Constrained Optimal Power Flow for Preventive Control of Rotor Angle Stability and Voltage Sags
Autores e instituciones de adscripción	Jorge Uriel Sevilla-Romero [1]; Alejandro Pizano-Martínez [2]; Claudio Rubén Fuerte-Esquivel [1]; and Reymundo Ramírez-Betancour [3] [1] Faculty of Electrical Engineering, Universidad Michoacana de San Ni- colás de Hidalgo, 58030 Morelia, México [2] Department of Electrical Engineering, Univers- idad of Guanajuato, 36787 Salamanca, México [3] Department of Electrical and Electronic En- gineering, Universidad Juárez Autónoma de Tabasco, 86040 Villahermosa, México

Resumen	In practice, an equilibrium point of the power system is considered transiently secure if it can withstand a specified contingency by maintaining transient evolution of rotor angles and voltage magnitudes within set bounds. A novel sequential approach is proposed to obtain transiently stable equilibrium points through the preventive control of transient stability and transient voltage sag (TVS) problems caused by a severe disturbance. The proposed approach conducts a sequence of non-heuristic optimal active power re-dispatch of the generators to steer the system toward a transiently secure operating point by sequentially solving the transient-stability-constrained optimal power flow (TSC-OPF) problems. In the proposed approach, there are two sequential projection stages, with the first stage ensuring the rotor angle stability and the second stage removing TVS in voltage magnitudes. In both projection stages, the projection operation corresponds to the TSC-OPF, with its formulation directly derived by adding only two steady-state variable-based transient constraints to the conventional OPF problem. The effectiveness of this approach is numerically demonstrated in terms of its accuracy and computational performance by using the Western System Coordinated Council (WSCC) 3-machine 9-bus system and an equivalent model of the Mexican 46-machine 190-bus system.
Palabras claves	Transient analysis; Rotors; Power system stability; Numerical stability; Voltage control; Stability criteria; Generators

Revista	**FITOTERAPIA**
ISSN	1873-6971
DOI	https://doi.org/10.1016/j.fitote.2024.106194
Título del Artículo	Untargeted metabolic analysis of *Epaltes mexicana* by LC-QTOF-MS: Terpenes with activity against human cancer cell lines
Autores e instituciones de adscripción	Tamara Juárez Velázquez [1]; José Arnold González Garrido [1]; Irma Sánchez Lombardo [1]; Nelly del Carmen Jiménez Pérez [2]; Ivonne María Olivares Corichi [3]; José Rubén García Sánchez [3]; Oswaldo Hernández Abreu [1] [1] Centro de Investigación de Ciencia y Tecnología Aplicada de Tabasco, Universidad Juárez Autónoma de Tabasco, Carretera Cunduacán-Jalpa km. 1 Col. La Esmeralda, Cunduacán 86690, Tabasco, Mexico [2] Herbario UJAT, División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Carretera Villahermosa-Cárdenas km. 0.5 S/N, Entronque a Bosques de Saloya, Villahermosa, Tabasco, Mexico [3] Escuela Superior de Medicina, Instituto Politécnico Nacional, Salvador Díaz Mirón esq. Plan de San Luis S/N, Miguel Hidalgo, Casco de Santo Tomas, Ciudad de México, Mexico
Resumen	*Epaltes mexicana* is a plant widely used in traditional medicine and as a food in Mexico; however, its phytochemical and pharmacological studies are limited. This study aimed to identify the active secondary metabolites of *Epaltes mexicana* and determine its cytotoxic activity on cancer cell lines. Three organic extracts were obtained by maceration using *n*-hexane, dichloromethane, and methanol. The *n*-hexane extract was fractioned by simple column chromatography. Eight terpenes were annotated in collection 6 (**C6**) by LC-QTOF-MS using a gradient elution and Electrospray Ionization (ESI) in positive ion mode: **1)** Gibberellin A15, **2)** farfugin A, **3)** dehydromyodesmone, **4)** eremopetasitenin A1, **5)** hydroxyisonobili, **6)** anhydrocinnzeylanine, **7)** nigakilactone H and **8)** taxodione. On the other hand, **C6** showed a concentration-dependent cytotoxic effect on cancer cell lines MCF-7 (E_{max} = 74.69 ± 6.19 % and IC_{50} = 6.31 µg/mL), MDA-MB-231 (E_{max} = 79.28 ± 12.12 % and IC_{50} = 124.21 µg/mL), and SiHa (E_{max} = 82.96 ± 6.02 % and IC_{50} = 124.31 µg/mL). The **C6** did not show a cytotoxic effect against DU-145 and non-cancerous cells from the mammary glands MCF-10A. These results indicate cytotoxic specificity on cancer cell lines and support the hypothesis that terpenes identified in *E. mexicana* must be investigated and developed for non-clinical and clinical trials as potential anti-cancer drugs.
Palabras claves	Citotoxicity; *Epaltes mexicana*; LC-QTOF-MS; Metabolic profile; Terpenes.

Revista	**MEAT SCIENCE**
ISSN	1873-4138
DOI	https://doi.org/10.1016/j.meatsci.2023.109369

Título del Artículo	Using fat thickness and *longissimus thoracis* traits real-time ultrasound measurements in Black Belly ewe lambs to predict carcass tissue composition through multiresponse multivariate adaptive regression splines algorithm
Autores e instituciones de adscripción	Germani Adrián Muñoz Osorio [1]; Cem Tırınk [2]; Thobela Louis Tyasi [3]; Marco Antonio Ramírez Bautista [4]; Alvar Alonzo Cruz Tamayo [5]; Dany Alejandro Dzib Cauich [6]; Ricardo A. García Herrera [1]; Alfonso J. Chay Canul [1] [1] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Carr, Villahermosa-Teapa, km 25, Villahermosa CP 86280, Tabasco, Mexico [2] Igdir University, Faculty of Agriculture, Department of Animal Science, Igdir TR76000, Türkiye [3] Department of Agricultural Economics and Animal Production, University of Limpopo, Private Bag X1106, Sovenga 0727, South Africa [4] Tecnológico Nacional de México/Instituto Tecnológico de Chiná, Chiná, Campeche, Mexico [5] Facultad de Ciencias Agropecuarias, Universidad Autónoma de Campeche, Escárcega, Campeche, Mexico [6] Tecnológico Nacional de México, Instituto Tecnológico Superior de Calkiní, Av. Ah-Canul, Calkiní C.P. 24900, Campeche, Mexico
Resumen	The main idea of the current study was to estimate carcass tissue composition using fat thickness and *longissimus thoracis* (LT) traits real-time ultrasound measurements (USM) in Black Belly ewe lambs through multiresponse multivariate adaptive regression splines (MARS) algorithms. Twenty-four hours before slaughter, subcutaneous (SFT) and kidney-fat thickness (KFT), LT depth (LTD), width (LTA, cm) and area (LTMA) were measured in 60 lambs (BW of 26.40 ± 7.01 kg). Information on carcass and non-carcass components was recorded after slaughter. The total carcass muscle (TCM), total carcass bone (TCB), and total carcass fat (TCF) had a low to high correlation ($P < 0.01$) with BW, cold carcass weight (CCW), and LTD, SFT, KFT, and LDMA. The CCW (%65.58) and SFT (%16.70) were the most effective variables, whilst LTD (%9.57) and LTMA (%8.15) were the lowest variables for determining TCB, TCM, and TCF. The multiresponse MARS algorithm provides an accurate and efficient means of estimating TCF, TCB, and TCM.
Palabras claves	Carcass dissection; Data mining; *In vivo* measurements; Predictions methods.

Revista	**ANIMALS**
ISSN	2076-2615
DOI	https://doi.org/10.3390/ani14172610
Título del Artículo	Variation in the Diet of Hatchling Morelet's Crocodile (*Crocodylus moreletii*) in the Wild
Autores e instituciones de adscripción	Mariana González Solórzano [1]; Marco A. López Luna [2]; Laura T. Hernández Salazar [1]; Edgar Ahmed Bello Sánchez [1]; Jorge E. Morales Mávil [1] [1] Biología de la Conducta, Instituto de Neuroetología, Universidad Veracruzana, Dr. Luis Castelazo s/n Col. Industrial Ánimas, Xalapa 91190, Veracruz, Mexico [2] División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Carr. Villahermosa-Cárdenas km 0.5 s/n Entrq. Bosques de Saloya, Villahermosa 86039, Tabasco, Mexico
Resumen	The relationship between diet and behavior is essential to understanding an animal's strategies to obtain food, considering ontogenical changes. In reptiles, there is a relationship between the length of the individual and the size of the prey it consumes. Studies have focused on the ontogenetic changes in reptile diets from hatchling to adult, but only a few studies have focused on the transition from hatchling to juvenile. We aimed to describe and analyze the composition, variation, diversity, and overlap in the diet of hatchling Morelet's crocodiles (*Crocodylus moreletii*) for three size intervals during the hatchling–juvenile transition. We captured 31 hatchling Morelet's crocodiles in an urbanized lagoon in Tabasco. We performed stomach-flushing to determine the diet. Additionally, we estimated the volume, frequency of occurrence, and relative importance of diet items and analyzed the relationship between prey type and the total length of the individuals. The diversity of the hatchling prey suggests a generalist diet. We observed two items not previously described in the diet of hatchling crocodiles. In addition, we found differences in diet between the initial and final size intervals, as increases in the length of prey appeared that they did not consume when they were hatchlings. Our results contribute new information to the dietary changes that occur during the hatchling–juvenile transition.
Palabras claves	*Crocodilia*; dietary pattern; ontogenetic change

Revista	**BIOREMEDIATION JOURNAL**
ISSN	1098-5549
DOI	https://doi.org/10.1080/10889868.2024.2384986
Título del Artículo	Wastewater treatment using a microalgae consortium mainly composed of *chlorella*, in Mexico
Autores e instituciones de adscripción	Yucundo Mendoza Tolentino [1]; Karina Aguilar Arteaga [2]; Diego Alejandro Rosas Escamilla [2]; Brenda Ponce Lira [2]; Araceli Castañeda Ovando [3]; Carolina Conde Mejía [4] [1] Universidad Tecnologica del Valle del Mezquital, Carretera Ixmiquilpan-Capula Km, Ixmiquilpan, Hgo., Mexico; [2] Agroindustry Engineering Department, Universidad Politecnica de Francisco I. Madero, Francisco I. Madero, Tepatepec, Mexico; [3] Chemistry Department, Universidad Autonoma del Estado de Hidalgo, Mineral de la Reforma, Mexico; [4] División académica Multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, Jalpa de Méndez, México
Resumen	The bioremediation capacity of microalgae found in the wastewater channels in Irrigation District 03 (DR03) in Mexico was studied. The study evaluated the effect of pH, aeration, light intensity, and water source on the productivity, culture time, and composition of the microalgal biomass, predominantly made up of *Chlorella vulgaris* spp. Parameters such as Chemical Oxygen Demand (COD), total solids (TS), and turbidity were monitored to assess the efficiency and bioremediation capacity of the microbial consortium. The yield production of microalgal biomass was measured to evaluate the amount produced per unit volume of treated water. Two culture conditions were assessed: uncontrolled and controlled conditions of aeration and lighting. Under controlled culture conditions, a productivity of 0.031 g L^{-1} d^{-1} biomass with 17% lipidic fraction and 37.65% ash content was observed, along with a reduction in COD and turbidity by 57 and 85%, respectively. A biomass productivity of 0.024 g L^{-1} d^{-1} was obtained.
Palabras claves	Biomass; bioremediation; microalgal biomass; wastewater treatment; wastewater treatment plants

Revista	**JOURNAL OF INTERNATIONAL WOMENS STUDIES**
ISSN	1539-8706
DOI	https://vc.bridgew.edu/jiws/vol26/iss1/10
Título del Artículo	Women's Empowerment and the Honey Production Projects in the Protected Areas of Usumacinta Canyon, Mexico
Autores e instituciones de adscripción	Paola Selene Vera Martínez [1]; Erika Guadalupe Ceballos Falcón [2] [1] Autonomous University of Baja California, Mexico [2] Juárez Autonomous University of Tabasco, Mexico
Resumen	Beekeeping is an activity with positive effects for biodiversity and food security; furthermore, it is compatible with the conservation objectives of protected areas. Likewise, previous studies show that the participation of women in beekeeping projects gives them access to paid work and triggers the possibility of their empowerment. The aim of the article is to explore the process of women's empowerment as one of the social results that derives from the meliponic farmers and beekeepers' projects implemented in the protected area of the Usumacinta Canyon, Mexico. For this research project, visits were made to the places of honey production in the Usumacinta Canyon, notes were collected from participant observation and unstructured interviews were taken at the site. The findings indicate that the participation of women in these projects has given them access to material resources, such as earning income from their work, and they exhibited other dimensions of the empowerment process, in particular agency—the ability to define and achieve their goals.
Palabras claves	Women's empowerment, Beekeeping, Usumacinta Canyon, Mexican women, Participant observation, Women's agency, Protected areas.

Revista	**JOURNAL OF CHEMICAL TECHNOLOGY AND BIOTECHNOLOGY**
ISSN	0268-2575
DOI	https://doi.org/10.1002/jctb.7601
Título del Artículo	ZnO nanomaterials with enhanced antimicrobial activity obtained by *Eichhornia crassipes* aqueous extract-mediated synthesis
Autores e instituciones de adscripción	Rosendo López González [1]; Mirian Hernández Gutiérrez [1]; Ruth Lezama García [2]; Sergio Alberto Gómez Cornelio [2]; Carlos Lobato [3]; Abraham Gómez Rivera [3]; Patricia Quintana Owen [4]; Mayra Angélica Alvarez Lemus [2] [1] Nanotechnology Laboratory, Academic Division of Engineering and Architecture, Juarez Autonomous University of Tabasco, Cunduacán, Mexico [2] Laboratory of Bioassays and Environmental Testing, Academic Division of Engineering and Architecture, Juarez Autonomous University of Tabasco, Cunduacán, Mexico [3] Academic Division of Basic Sciences, Juarez Autonomous University of Tabasco, Cunduacán, Mexico [4] Applied Physics Department, CINVESTAV-Merida, Mérida, Mexico
Resumen	**Background:** Zinc oxide nanoparticles (ZnO NPs) were obtained through precipitation synthesis, using aqueous water hyacinth leaf extract (*Eichhornia crassipes*) under alkaline conditions. The effect of the extract on the physicochemical and antimicrobial properties of the ZnO was evaluated starting from concentrated extract (labeled as E100) and performing two dilutions of this concentrated extract at 50% and 25% in water (E50, and E25). **Results:** The FTIR spectra revealed strong peaks at ≈3440 cm−1, corresponding to vibrations from O□H stretching, and medium-intense peaks at 1384 and 1327 cm−1, assigned to C□C, □COOH and C□O□C vibrations, which are related to the presence of the extract; a weak band at 884 cm−1 and a broad band in the region below 600 cm−1 indicate the presence of Zn□O. The hydrodynamic size of the ZnOE100, ZnOE50 and ZnOE25 samples were 202, 244 and 313 nm, respectively. No significant variations on the Eg value were observed. Field emission scanning electron microscopy images showed that the ZnO NPs have triangular-like shapes and agglomeration of the NPs synthesized for the ZnOE25 sample. The minimum inhibitory concentration (MIC) of the ZnO NPs showed no significant effects related to the concentration the plant extract used. **Conclusions:** Variations in particle size and zeta potential can be introduced in ZnO by varying the content of the extract; the presence of organic groups from the extract, along with a positive zeta potential value, can promote the bactericide effect of ZnO nanomaterials prepared by bio-assisted synthesis.
Palabras claves	ZnO NPs; *Eichhornia crassipes*; bactericidal effects; *Escherichia coli*; *Staphylococcus aureus*

Revista	**MATHEMATICAL METHODS IN THE APPLIED SCIENCES**
ISSN	0170-4214
DOI	https://doi.org/10.1002/mma.10494
Título del Artículo	Zero-Hopf bifurcation in a family of tritrophic food chain model with Holling III-III functional response
Autores e instituciones de adscripción	Castellanos Víctor [1]; Llibre Jaume [2] [1] División Académica de Ciencias Básicas, UJAT, Cunduacán, México [2] Departament de Matemátiques, Universitat Autónoma de Barcelona, Barcelona, Spain
Resumen	In this paper, we apply the second-order averaging theory for obtaining an explicit expression of the small amplitude periodic solution that bifurcates from a zero-Hopf equilibrium point of a tritrophic food chain model. This model considers logistic growth rate for the lowest trophic level, Holling functional responses type III for the middle and for the highest level. We first prove that this model has a zero-Hopf equilibrium point, after we show that from this equilibrium bifurcates a small limit cycle, and finally, we provide the explicit expression of the first two terms in the power series of this limit cycle. These differential systems for which the equilibrium point is non hyperbolic are not easy to study, in particular, if the equilibrium is zero-Hopf. As far as we know, this is the first time that the averaging theory has been used to exhibit the first and second terms of the power series expansion of the analytical expression of a limit cycle that bifurcates from a zero-Hopf equilibrium in the food chain models.
Palabras claves	Periodic orbit; Averaging theory; Zero-Hopf bifurcation; Population dynamics

Revista	**CURRENT BIOLOGY**
ISSN	0960-9822
DOI	https://doi.org/10.1016/j.cub.2024.09.027
Título del Artículo	Integrative analyses of convergent adaptation in sympatric extremophile fishes
Autores e instituciones de adscripción	Ryan Greenway [1]; Rishi De Kayne [2]; Anthony P. Brown [3,8]; Henry Camarillo [1,9]; Cassandra Delich [1]; Kerry L. McGowan [3]; Joel Nelson [3]; Lenin Arias Rodríguez [4]; Joanna L. Kelley [2]; Michael Tobler [5,6,7] [1] Kansas State University, Division of Biology, 116 Ackert Hall, Manhattan, KS 66506, USA [2] University of California Santa Cruz, Department of Ecology and Evolutionary Biology, 1156 High Street, Santa Cruz, CA 95064, USA [3] Washington State University, School of Biological Sciences, 301 Abelson Hall, Pullman, WA 644236, USA [4] Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias Biológicas, Carretera Villahermosa-Cárdenas Km. 0.5 S/N, Entronque a Bosques de Saloya, 86150 Villahermosa, Tabasco, Mexico [5] University of Missouri, St. Louis, Department of Biology, 1 University Boulevard, St. Louis, MO 63121, USA [6] University of Missouri, St. Louis, Whitney R. Harris World Ecology Center, 1 University Boulevard, St. Louis, MO 63121, USA [7] Saint Louis Zoo, WildCare Institute, 1 Government Drive, St. Louis, MO 63110, USA [8] Present address: University of California, Davis, California National Primate Research Center, 1 Shields Avenue, Davis, CA 95616, USA [9] Present address: Yale University, Department of Ecology and Evolutionary Biology, 165 Prospect Street, New Haven, CT 06520, USA
Resumen	The evolution of independent lineages along replicated environmental transitions frequently results in convergent adaptation, yet the degree to which convergence is present across multiple levels of biological organization is often unclear. Additionally, inherent biases associated with shared ancestry and variation in selective regimes across geographic replicates often pose challenges for confidently identifying patterns of convergence. We investigated a system in which three species of poeciliid fishes sympatrically occur in a toxic spring rich in hydrogen sulfide (H_2S) and an adjacent nonsulfidic stream to examine patterns of adaptive evolution across levels of biological organization. We found convergence in morphological and physiological traits and genome-wide patterns of gene expression among all three species. In addition, there were shared signatures of selection on genes encoding H_2S toxicity targets in the mitochondrial genomes of each species. However, analyses of nuclear genomes revealed neither evidence for substantial genomic islands of divergence around genes involved in H_2S toxicity and detoxification nor substantial congruence of strongly differentiated regions across population pairs. These non-convergent, heterogeneous patterns of genomic divergence may indicate that sulfide tolerance is highly polygenic, with shared allele frequency shifts present at many loci with small effects along the genome. Alternatively, H_2S tolerance may involve substantial genetic redundancy, with non-convergent, lineage-specific variation at multiple loci along the genome underpinning similar changes in phenotypes and gene expression. Overall, we demonstrate variability in the extent of convergence across organizational levels and highlight the challenges of linking patterns of convergence across scales.
Palabras claves	Poeciliidae; adaptive evolution; convergent evolution; ecological genomics; hydrogen sulfide; local adaptation; mitochondria; population genomics.

Revista	**SMALL RUMINANT RESEARCH**
ISSN	1879-0941
DOI	https://doi.org/10.1016/j.smallrumres.2024.107400
Título del Artículo	Use of real-time ultrasound measurements of fat thickness and *longissimus thoracis* muscle characteristics for predicting body fat depots in crossbred hair ewes
Autores e instituciones de adscripción	José Carlos García Cigarroa [1]; Armin Abelardo Luna Mendicuti [2]; Jorge Rodolfo Canul Solís [2]; Luis Enrique Castillo Sánchez [2]; José Herrera Camacho [3]; Einar Vargas Bello Pérez [4]; Alfonso J. Chay Canul [1] [1] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Carretera Villahermosa-Teapa, Villahermosa, Tabasco CP 86280, Mexico [2] Tecnológico Nacional de México/ Instituto Tecnológico de Tizimín, Tizimín, Yucatán CP 97702, Mexico [3] Instituto de Investigaciones Agropecuarias y Forestales, Universidad Michoacana de San Nicolás de Hidalgo, Carretera Morelia Zinapécuaro Kilómetro 9.5, Tarímbaro, Michoacán CP 58880, Mexico [4] Facultad de Zootecnia y Ecología, Universidad Autónoma de Chihuahua, Periférico R. Aldama Km 1, Chihuahua 31031, Mexico

Resumen	This study aimed to predict body fat depots using ultrasound measurements (USM) of fat thickness and *longissimus thoracis* muscle characteristics in crossbred hair ewes. A total of 24 animals with a mean body weight (BW) of 37 ± 4 kg and a body condition score of 2.39 ± 0.49 were used. USM was recorded 24 h before slaughter and included: subcutaneous fat thickness (SFT), area (LTMA), amplitude (LTA), and depth (LTD) of the *l. thoracis* muscle and kidney fat thickness (µKFT). After slaughter, the internal fat (IF) was separated, classified, and weighed as mesenteric (MF), omental (OF), or pelvic fat (PF). The left half was then separated into subcutaneous and intermuscular fat (CF), and the muscle and bone tissues were weighed separately and adjusted to take account of the whole animal. Total, body fat (TBF) was determined to be the IF plus the CF weights. LTA and LTMA correlated poorly to moderately with fat depots ($0.37 \leq r \leq 0.74$, $P < 0.05$). Other than CF, µKFT showed poor to moderate correlation with the other depots of body fat ($0.44 \leq r \leq 0.75$, $P < 0.05$). The regression model used to predict MF had r^2 of 0.87 (RSD=0.14 kg) and included BW and LTMA (P<0,05). OF and PF were predicted with r^2 of 0.55 and 0.44, respectively, including µKFT (RSD = 0.20 and 0.17 kg). IF was predicted by empty BW, LTMA, and µKFT with r^2 as 0.81 (RSD=0.30 kg). For TBF, EBW and LTMA explained 72 % of its variation (RSD= 0.59 kg). USM of fat thickness and *l. thoracis* muscle characteristics can improve the accuracy of predicting body energy reserves in crossbred hair ewes.
Palabras claves	N/A

Revista	**JOURNAL OF DAIRY RESEARCH**
ISSN	0022-0299
DOI	https://doi.org/10.1017/S0022029924000293
Título del Artículo	Productive performance and milk composition of dairy ewes supplemented with corn silage (*Zea mays L.*), sunflower (*Helianthus annuus*) silage and their mixture
Autores e instituciones de adscripción	Manuel González Ronquillo [1]; Navid Ghavipanje [2]; Lizbeth E. Robles Jiménez [1,3]; Eduardo Cardoso Gutiérrez [1]; Edgar Aranda Aguirre [1]; Augusto Lizarazo [4]; Ricardo A. García Herrera [3]; Octavio A. Castelán Ortega [1]; Einar Vargas Bello Pérez [5,6] [1]Departamento de Nutricion Animal, Facultad de Medicina Veterinaria y Zootecnia, Universidad Autonoma del Estado de Mexico, Instituto Literario 100 Ote, Toluca, State of Mexico 50000, Mexico. [2] Department of Animal Science, Faculty of Agriculture, University of Birjand, Birjand 97175-331, Iran. [3]División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Carretera Villahermosa-Teapa, km 25, R/A. La Huasteca 2ª Sección, CP 86280, Villahermosa, Tabasco, Mexico. [4]Facultad de Medicina Veterinaria y Zootecnia, Universidad Nacional Autonoma del Mexico, Ciudad de Mexico, Mexico. [5] Department of Animal Sciences, School of Agriculture, Policy and Development, University of Reading, P.O. Box 237, Earley Gate, Reading RG6 6EU, UK. [6]Facultad de Zootecnia y Ecología, Universidad Autónoma de Chihuahua, Periférico R. Aldama Km 1, 31031 Chihuahua, Mexico.
Resumen	The work reported in the Research Communication investigated *in vitro* rumen gas kinetics and fermentation profile as well as *in vivo* performance of lactating ewes fed corn silage (CS), sunflower silage (SFS) and their 50: 50 mixture (CS-SFS). For the *in vivo* experiment, nine early-lactation Suffolk × Texel ewes were grouped in a replicated 3 × 3 Latin square design of three 21-d periods. Treatments were based on *ad libitum* CS, SFS, and CS-SFS supplemented with concentrate at 48 g/kg $LW^{0.75}$. *In vitro* results showed that the CS had the highest dry matter degraded substrate and microbial crude protein production followed by CS-SFS. The *in vivo* data showed that animals fed on CS had higher digestibility of dry matter and organic matter than CS-SFS, while SFS were intermediate. Nitrogen (N) intake, fecal N excretion, and urine N excretion were similar between groups; however, milk N excretion was lower in SFS than CS. Milk yield was higher for CS and CS-SFS than SFS group, however, SFS-fed ewes had higher milk fat content than either CS or CS-SFS (all differences reported here were significant, $P < 0.05$ or better). Overall, CS-SFS could be used as dietary roughage for dairy ewes without deleterious effects on nutrient intake, N-balance and milk yield whilst potentially offering a more sustainable alternative to CS.
Palabras claves	Corn silage; dairy ewes; *in vitro*; nitrogen balance; sunflower silage.

Revista	**JOURNAL OF DAIRY RESEARCH**
ISSN	0022-0299
DOI	https://doi.org/10.1017/S0022029924000578
Título del Artículo	Predicting the body weight of crossbred Holstein x Zebu dairy cows using multivariate adaptive regression splines algorithm
Autores e instituciones de adscripción	Ignacio Vázquez Martínez [1,2]; Cem Tirink [3]; Fernando Casanova Lugo [4]; Dixan Pozo Leyva [4]; Daniel Mota Rojas [5]; Murat Baitugelovich Kalmagambetov [6]; Rashit Uskenov [7]; Ömer Gülboy [8]; Ricardo A. García Herrera [1]; Alfonso J. Chay Canul [1] [1] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Villaher-mosa, Tabasco, México. [2] Benemérita Universidad Autónoma de Puebla, Complejo Regional Norte, Tetela de Ocampo, Puebla, México. [3] Faculty of Agriculture, Department of Animal Science, Igdir University, TR76000, Igdir, Türkiye. [4] Tecnológico Nacional de México, Instituto Tecnológico de la Zona Maya, Othón P. Blanco, Quintana Roo, México. [5] Neurophysiology, Behavior and Animal Welfare Assessment, Department of Animal Production and Agriculture (DPAA), Universidad Autónoma Metropolitana Xochimilco Campus, Mexico City 04960, Mexico. [6] Aktobe Agricultural Experimental Station, Aktobe, Republic of Kazakhstan. [7] Agronomic Faculty, S. Seifullin Kazakh Agrotechnical University, Z10P6B8, 62 Zhenis av., Astana, Kazakhstan. [8] Faculty of Agriculture, Department of Animals Science, Ondokuz Mayis University, TR55139, Samsun, Türkiye.
Resumen	This study aimed to estimate live body weight from body measurements for Holstein × Zebu dairy cows (n = 156) reared under conditions of humid tropics in Mexico using multivariate adaptive regression splines algorithm (MARS) with several train-test proportions. The body measurements included withers height, rump height, hip width, heart girth, body length and diagonal body length. The data were divided into 65:35, 70:30 and 80:20 split data for training and testing sets, respectively. The MARS algorithm was used to construct a prediction model, which predicted the body weight from the body measurements of the test dataset. The results emphasized that the MARS algorithm had an explanation rate for 80:20 train and test set of 0.836 and 0.711, respectively, with minimum Akaike information criterion values. This indicates that it is a reliable way of predicting body weight from body measurements. The results suggest that body weight prediction can be performed with the MARS algorithm in a reliable way, therefore, this algorithm may be a useful tool for animal breeders and researchers in the development of feeding and selection-aimed approaches.
Palabras claves	Body measurements; Body weight; crossbred; Multivariate Adaptive Regression Splines (MARS); tropical cows.

Revista	**NONLINEAR ANALYSIS-REAL WORLD APPLICATIONS**
ISSN	1878-5719
DOI	https://doi.org/10.1016/j.nonrwa.2024.104232
Título del Artículo	Persistence and zero-Hopf equilibrium in the tritrophic food chain model with Holling functional response
Autores e instituciones de adscripción	Víctor Castellanos [1]; Jaume Llibre [2] [1] División Académica de Ciencias Básicas, UJAT, Km 1 Carretera Cunduacán–Jalpa de Méndez, c.p. 86690 Cunduacán Tabasco, Mexico [2] Departament de Matemátiques, Universitat Autónoma de Barcelona, 08193 Bellaterra, Barcelona, Catalonia, Spain
Resumen	In this paper, we analyze the persistence of three species in a three-level food chain model. We characterize when such a model exhibits a zero-Hopf equilibrium point and show that it is possible only if the functional responses in the model are of type Holling III or IV.
Palabras claves	Periodic orbit; Averaging theory; Zero-Hopf bifurcation; Population dynamics

Revista	**MATHEMATICS**
ISSN	eISSN:2227-7390
DOI	https://doi.org/10.3390/math12213380
Título del Artículo	Mathematical Model to Study the Effect of Refuge on Cannibalism in *Atractosteus tropicus*

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Resumen	Cannibalism is a behavior that different species of fish exhibit in the early stages of their life, and it has been widely reported. In Tabasco, Mexico, the ancestral species *Atractosteus tropicus* is farmed, which is a freshwater fish with a high nutritional and economic value. This species exhibits high cannibalistic behavior both in its larval and juvenile stages, which considerably decreases its production. Therefore, strategies have been developed to mitigate the effects of this behavior. One of them is the placement of shelters (rocks and artificial vegetation), which allow the vulnerable population to protect themselves from cannibals. The goal of this work is to study the effect of shelters on the cannibalistic behavior of the *A. tropicus* population through a mathematical model. The population is divided into two classes, the vulnerable population (prey) and the cannibal population (predator). Moreover, a system of ordinary differential equations is established, which is analyzed, and sufficient conditions for the coexistence of the two species are shown. Numerical simulations show coexistence by varying levels of refuge. The results obtained in this work can be applied to other populations that exhibit cannibalistic behavior.
Palabras claves	Global stability; cannibal; Hopf bifurcation; coexistence

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Título del Artículo	From $LaCrO_3$ towards $LaCr_{0.2}Mn_{0.2}Fe_{0.2}Al_{0.2}Ga_{0.2}O_3$ high-entropy ceramic compound: Crystal structure, dielectric and magnetic properties
Autores e instituciones de adscripción	A. Durán [1]; R. Falconi [2]; J. Mata [3]; L. Huerta [4]; M. González [5]; E. Reguera [5]; J.C. Torres [2] [1] Centro de Nanociencias y Nanotecnología, Universidad Nacional Autónoma de México, Km. 107 Carretera Tijuana-Ensenada, Apartado Postal 14, Ensenada, BC C.P.22800, Mexico [2] División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Carretera Cunduacán-Jalpa de Méndez Km 1. Col. La Esmeralda, Apartado Postal 24, Cunduacán, Tabasco C.P. 86690, Mexico [3] Facultad de Ingeniería, Arquitectura y Diseño, Universidad Autónoma de Baja California, km. 103 Carretera Tijuana-Ensenada, Ensenada, BC C.P. 22860, Mexico [4] Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Apartado Postal 70-360, Ciudad de México 04510, Mexico [5] Instituto Politécnico Nacional, Centro de Investigación en Ciencia Aplicada y Tecnología Avanzada, Unidad Legaria, Legaria 694, Ciudad México, Mexico
Resumen	A group of five perovskite-type ceramic systems was designed by solid-state reaction, increasing the configurational entropy, ΔS^{conf} at the B-site, going from low and medium to finally reaching a high-entropy system. Chemical elements, crystal structure, and microstructure characterization, as well as the dielectric and magnetic properties, are discussed from the single phase $LaCrO_3$ towards a continuous equiatomic multicomponent $LaCr_{0.2}Mn_{0.2}Fe_{0.2}Al_{0.2}Ga_{0.2}O_3$ ceramic compounds. Through a combination of structural analysis and XPS spectroscopy study, it is found that not only the configurational entropy ΔSconf term, but also the enthalpy of mixing, ΔH_{mix} through of arising of the coexistence of mixed valence state, oxygen vacancies, and local octahedral distortions lead to the stabilization of the single phase in equimolar multicomponent perovskite systems. The arising of Cr^{3+}/Cr^{6+} and Mn^{3+}/Mn^{2+} mixed valence state drives the AC electric conductivity through the presence of two kinds of charge carriers, small polarons and oxygen vacancies in LCM, LCMF, LCMFA, and LCMFAG ceramic compounds. The occurrence of these two classes of charge carriers progressively increases the AC electric conductivity at room and high temperatures for each ceramic compound, being higher for the LCMFA entropy compound, making it a potential candidate for solid oxide fuel cell (SOFC) applications. As expected, the increases of compositional random cations display rich magnetic properties arising from competing magnetic interactions driven by the sublattice of Cr, Mn, and Fe

Resumen	magnetic ions. The resulting ΔS^{conf} increase leads to a Griffith-like phase. The results also show that not only the ferromagnetic clusters of the $LaMnO_3$ (A_xF_z) sublattice but also the weak ferromagnetism associated with the $LaCrO_3$ (G_xF_z), and $LaFeO_3$ (G_xF_z) sublattices play a predominant role in the formation of the Griffiths-like phase in the low, medium and high-entropy ceramic systems.
Palabras claves	High-entropy ceramics; Perovskite structure; Dielectric properties; Magnetic properties; Griffiths phase

Revista	**BIOMEDICINES**
ISSN	eISSN:2227-9059
DOI	https://doi.org/10.3390/biomedicines12102296
Título del Artículo	Exploring the Relationship between Telomere Length and Cognitive Changes in Post-COVID-19 Subjects
Autores e instituciones de adscripción	Guillermo Efrén Villar Juárez [1]; Alma Delia Genis Mendoza [2,3]; J. Nicolás I. Martínez López [4]; Ana Fresan [4]; Carlos Alfonso Tovilla Zarate [5]; German Alberto Nolasco Rosales [6]; Ghandy Isidro Juárez De la Cruz [6]; David Ruiz Ramos [6]; Mario Villar Soto [7]; Paola Mejía Ortiz [2]; Marlen Gómez Mendiola [3]; Isela Esther Juárez Rojop [6]; Humberto Nicolini [2] [1] Escuela de Medicina, Universidad Anáhuac Querétaro, Querétaro 76246, Mexico [2] Instituto Nacional de Medicina Genómica, Secretaría de Salud, Mexico City 14610, Mexico [3] Hospital Psiquiátrico Infantil Dr. Juan N. Navarro, Servicios de Atención Psiquiátrica, Mexico City 14080, Mexico [4] Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz, Mexico City 14370, Mexico [5] Divisón Académica Multidisciplinaria de Comalcalco, Universidad Juarez Autónoma de Tabasco, Comalcalco 86658, Mexico [6] División Académica de Ciencias de la Salud, Universidad Juarez Autónoma de Tabasco, Villahermosa 86100, Mexico [7] Hospital Regional de Alta Especialidad de Salud Mental, Villahermosa 86029, Mexico
Resumen	**Background/Objectives:** Emerging evidence suggests that patients suffering from COVID-19 may experience neurocognitive symptoms. Furthermore, other studies indicate a probable association between leukocyte telomere length (LTL) and neurocognitive changes in subjects with post-COVID-19 condition. Our study was designed to determine the correlation between telomere length and cognitive changes in post-COVID-19 subjects. **Methods:** This study included 256 subjects, categorized based on SARS-CoV-2 infection from 2020 to 2023. In addition, subjects with a psychiatric diagnosis were considered. Moreover, the MoCA and MMSE scales were applied. Telomere length was determined using a polymerase chain reaction, and statistical analysis was employed using ANOVA and X^2 tests. **Results:** We identified a decrease in LTL in individuals with post-COVID-19 conditions compared to those without SARS-CoV-2 infection ($p \leq 0.05$). However, no association was found between LTL and cognitive impairment in the subjects post-COVID-19. **Conclusions:** The findings suggest that LTL is affected by SARS-CoV-2 infection. Nonetheless, this important finding requires further research by monitoring neurological changes in subjects with post-COVID condition.
Palabras claves	Telomere length; cognitive changes; post-COVID-19; SARS-CoV-2

Revista	**CONSTRUCTION AND BUILDING MATERIALS**
ISSN	1879-0526
DOI	https://doi.org/10.1016/j.conbuildmat.2024.139045
Título del Artículo	Effect of interior and exterior roof coating on heat gain inside a house
Autores e instituciones de adscripción	K.M. Aguilar Castro [1]; J.L. Cerino Isidro [1]; C.E. Torres Aguilar [1]; O. May Tzuc [2]; E.V. Macias Melo [1]; J. Serrano Arellano [3] [1] Universidad Juárez Autónoma de Tabasco, DAIA-UJAT, Tabasco CP 86690, Mexico [2] Universidad Autónoma de Campeche, Facultad de Ingeniería, Campeche CP 24085, Mexico [3] Instituto Tecnológico de Pachuca, Hidalgo C.P. 42080, Mexico

Resumen	This work evaluated the effect of changes in coatings (with different solar absorptances and emittances) on the thermal energy transfer by radiation through a roof sample. The coating on the interior surface of the roof was mainly analyzed. For this purpose, a sample roof configuration was designed, instrumented, and thermally evaluated. Under warm-humid climate conditions, roof coatings on the interior and exterior surfaces were applied. The reference roof sample (RS) consists of two extruded polystyrene plates. Four different coatings (Terracota Red, RR; Green, RV; Conventional white, B1; Reflective white, B2) were implemented on the upper surface of each plate, while only one coating was implemented on the inner surface of each plate (B1 or Aluminum foil, Al). From the results obtained with the RS and the development of a computational code where the transient one-dimensional heat conduction model is solved, it was possible to analyze the behavior of heat gains through a concrete slab. For this, four combinations of the exterior and interior coatings were implemented. The results showed that the combination B1-Al or B2-Al presented the most significant reduction in heat gains, with the highest reduction in thermal load of 49.53 %. These results show that the interior coatings significantly influence the heat flux behavior.
Palabras claves	N/A

Revista	**ANIMALS**
ISSN	eISSN:2076-2615
DOI	https://doi.org/10.3390/ani14203018
Título del Artículo	Effect of Long-Term Supplementation of AZOMITE (Hydrated Sodium Calcium Aluminosilicate) in Finishing Diets on Growth Performance, Dietary Energy, and Carcass Yield of Hairy Lambs
Autores e instituciones de adscripción	Claudia A. Vizcarra Chávez [1]; Jesús D. Urías Estrada [1]; Elizama Ponce Barraza [1]; Alfredo Estrada Angulo [1]; Yesica J. Arteaga Wences [1]; Beatriz I. Castro Pérez [1]; Jorge L. Ramos Méndez [1]; Luis Corona [2]; Armando Gómez Vázquez [3]; Alejandro Plascencia [1] [1] Faculty of Veterinary Medicine and Zootechnics, Autonomous University of Sinaloa, Culiacan 80260, Mexico [2] Faculty of Veterinary Medicine and Zootechnics, National Autonomous University of Mexico, Mexico City 04510, Mexico [3] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Villahermosa 82680, Mexico
Resumen	The aim of this study was to evaluate growth performance, dietary energy utilization, and carcass characteristics (carcass weight, dressing percentage, and visceral organ mass) of feedlot lambs fed different levels of AZOMITE (AZO), a source of volcanic clay composed of hydrated sodium calcium aluminosilicate, the same as that included in a finishing diet. For this reason, 36 Pelibuey × Katahdin crossbred intact male lambs (18.81 ± 3.04 kg initial weight) were used in a feeding trial lasting 81 d. Lambs were grouped by initial weight and assigned within six weight groupings to 18 pens in a randomized complete block design. Diets, offered *ad libitum*, were corn-based finishing diets with an 88:12 concentrate-to-forage ratio supplemented as follows: 1) no AZO inclusion (CTRL), 2) AZO inclusion at a 0.75% level (0.75AZO) in diet dry matter, 3) AZO inclusion at a 1.50% level (1.5AZO) in diet dry matter. Cracked corn was replaced by AZO. After the feeding trial was finished, lambs were slaughtered and carcass weight was registered and dressing percentage was calculated. The data were analyzed as a randomized complete block design, with the pen as the experimental unit. Water consumption and dry matter intake were not affected ($p \geq 0.11$) by supplemental AZO. The incorporation of AZO into the diet increased gain efficiency and observed dietary net energy (NE), being maximal with 0.75% AZO inclusion (quadratic effect, $p = 0.02$). The observed-to-expected dietary NE in the control group was as anticipated (1.00) according to the estimated energy based on the ingredient composition in diet, while in the 0.75AZO group, the observed dietary energy was 6% above expected, indicating a greater efficiency in energy utilization destined to growth (quadratic effect, $p = 0.006$). Lambs that were fed the AZO treatment showed an improvement (linear effect, $p = 0.04$) in hot carcass weight (HCW), and tended (linear effect, $p = 0.06$) to improve dressing percentage (DP) as AZO was increased in the diet. Visceral organ mass was not affected by the treatments. It is concluded that AZOMITE clay can be included up to 1.5% in finishing diets for lambs without negative effects on the intake of water and feed. Lambs that received diets supplemented with 0.75% AZO showed greater improvements in feed efficiency and dietary energy utilization, but an inclusion of 1.50% resulted in greater improvements to

Resumen	HCW and DP. This is the first report regarding the effects of AZO supplementation in the dietary energy utilization of fattening hairy lambs. Further research about the effects of AZO supplementation on ruminal and total tract digestion, carcass and meat quality, and the health of lambs is needed in order to more deeply understand the effects of AZO on its productivity performance.
Palabras claves	Feedlot lambs; volcanic clay; AZOMITE; productivity; dietary energy; carcass

Revista	**SOUTH AMERICAN JOURNAL OF HERPETOLOGY**
ISSN	1081-1710
DOI	https://doi.org/10.2994/SAJH-D-22-00013.1
Título del Artículo	Diversity of anurans in oil palm plantations in a human-dominated landscape in southeastern Mexico
Autores e instituciones de adscripción	Mircea G. Hidalgo Mihart [1]; Iván C. Flores Escalona [1]; Freddy Pérez Garduza [1]; Geny E. Vázquez Herrera [1]; Pierre Charruau [2] [1] División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Villahermosa, C.P. 86039 Tabasco, México. [2] El Colegio de la Frontera Sur, Villahermosa, C.P. 86280 Tabasco, Mexico.
Resumen	Oil palm plantations are expanding in Mexico, primarily in areas already dominated by induced grasslands and other crops. There is a large body of information on the reduction of biodiversity in oil palm plantations compared to conserved forests. However, only a few studies have been performed in already anthropized matrices where almost all the natural vegetation has been replaced. To determine the effect of oil palm plantations located in an anthropized landscape on amphibian biodiversity, we obtained amphibian species richness and abundance using 48 transects distributed among seven oil palm plantation estates situated in the Gulf of Mexico lowlands in southeastern Mexico and compared with the observed amphibian biodiversity obtained from 15 previously published amphibian surveys on the area. Our survey in the oil palm plantations resulted in 1,977 individuals belonging to 15 species from seven anuran families. Although anuran diversity varies among the studied plantation estates, few significant differences were detected. We observed that the species richness in oil palm plantations represents 41.7% of the species detected in the region. However, we observed that more than half of the species (21 of 36) that have been detected in the region appeared in less than 30% of the sites studied, and the 15 remaining species that are more frequently detected in the area, 12 (80%) are present in oil palm plantations. Our study region has a long history of agricultural use and is already heavily fragmented. Thus, the remarkable similarity observed between the anuran species found in oil palm plantations and the most frequent amphibian species in the Gulf of Mexico lowlands can be explained by an already depauperate landscape dominated by species that are disturbance-tolerant or benefited from habitat modifications. Oil palm plantations in the region will expand in the future. Our results show that if the expansion continues to replace induced grasslands or other crops will have a reduced impact on the anuran biodiversity in this region. However, this expansion should preserve the remanent secondary growth forest patches distributed along the landscape to maintain the regional anuran diversity.
Palabras claves	Amphibians; biological indicator; Chiapas; land use change; monoculture; Tabasco

Revista	**ENERGIES**
ISSN	eISSN:1996-1073
DOI	https://doi.org/10.3390/en17205065
Título del Artículo	Computing the Network's Equilibrium Point at the Fault Clearing Instant in Transient Stability Studies
Autores e instituciones de adscripción	Alejandro Pizano Martínez [1]; Reymundo Ramírez Betancour [2]; Enrique A. Zamora Cárdenas [1]; Claudio R. Fuerte Esquivel [3] [1] Department of Electrical Engineering, Universidad de Guanajuato, Carretera Salamanca-Valle de Santiago km 3.5 + 1.8, Salamanca 36787, Guanajuato, Mexico [2] Department of Electrical and Electronic Engineering, Universidad Juárez Autónoma de Tabasco, Av. Universidad, Villahermosa 86040, Tabasco, Mexico [3] Faculty of Electrical Engineering, Universidad Michoacana de San Nicolás de Hidalgo, Av. Francisco J. Múgica, Morelia 58030, Michoacán, Mexico

Resumen	This paper proposes an approach for computing the network's equilibrium point related to the fault clearing time in transient stability studies. The computation of this point is not a trivial task, particularly when the algebraic network's equations are expressed in the power balance form. A natural attempt to solve this problem is using Newton's method. However, convergence issues are found because of the lack of a general strategy for initializing nodal voltages at the clearing time. This problem has not been widely discussed in the existing literature and, therefore, is comprehensively analyzed in this paper. Furthermore, the paper proposes the use of a network's model based on current injections and an extended admittance matrix to overcome the problem. This model is efficiently solved via the fixed-point iteration method, which involves factorization of the extended admittance matrix into the product of a lower triangular matrix [L] and an upper triangular matrix [U]. This solution executes a just once and only forward–backward substitution during the iterative solution process. Case studies clearly demonstrate the proposal's effectiveness in computing the equilibrium point in operating conditions where Newton's method fails to converge.
Palabras claves	Time-domain simulations; fault clearing instant; current injections; algebraic variables

Revista	**EARTH SCIENCES RESEARCH JOURNAL**
ISSN	1794-6190
DOI	https://doi.org/10.15446/esrj.v28n2.112335
Título del Artículo	Climatic temperature indices for the coastal resilience observatory in Tabasco (Dos Bocas)-LANRESC
Autores e instituciones de adscripción	Mercedes Andrade Velázquez [1]; Martín José Montero Martínez [2]; M. F. Vargas Magaña [3] [1] CONAHCYT–Centro del Cambio Global y la Sustentabilidad (CCGS). Villahermosa, Tabasco, México. [2] Instituto Mexicano de Tecnología del Agua. Subcoordinación de Eventos Extremos y Cambio Climático, Jiutepec, Morelos. [3] División de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Cunduacán, Tabasco, México.
Resumen	This study focused on calculating climate change indices derived from maximum and minimum temperature variables for the Coastal Resilience Observatory in Tabasco, Dos Bocas, located in Paraíso, Tabasco, Mexico. The indices were computed using CLIMPACT2, 2007 version, and a total of 26 indices were obtained for the period from 1940 to 2022. Subsequently, significant trends were calculated using statistical tests such as Mann–Kendall, trend-free prewhitening, bias correction applied to prewhitening, and variance correction (by two methods). Sen's slope method was employed to determine the extent of alteration in extreme climate indices. Increasing trends were found in the indices tn90p (%), tx90p (%), tr (days), txgt50p (%), wdsi (days), su (days), tmge10 (days), tmge5 (days), gddgrow (days), and gsl (days), indicating the presence of local warming and providing evidence of climate change detection. These results contribute to updating climate information in the area and serve as a proposal for replication in the other six Coastal Observatories of the National Coastal Resilience Laboratory in Mexico, as part of measures related to climate stressors in coastal areas where these observatories are located. This information is valuable for decision-makers and the general population, as it will support socio-environmental adaptation and mitigation measures in the face of climate change as part of efforts to enhance the resilience of socioecosystems in coastal areas
Palabras claves	Climate change; temperature indices; coastal zone; Tabasco-Mexico.

Revista	**NEUROPSYCHIATRIC DISEASE AND TREATMENT**
ISSN	1098-5549
DOI	https://doi.org/10.2147/NDT.S460554
Título del Artículo	Circulating Cell-Free Mitochondrial DNA in Plasma of Individuals with Schizophrenia and Cognitive Deficit in Mexican Population
Autores e instituciones de adscripción	Dulce Dajheanne García de la Cruz [1,2]; Isela Esther Juárez Rojop [2]; Carlos Alfonso Tovilla Zarate [3]; Humberto Nicolini [4]; Alma Delia Genis Mendoza [4,5] [1] Unidad de Enseñanza e Investigación, Hospital Regional de Alta Especialidad de Salud Mental Villahermosa, Tabasco, México.

Autores e instituciones de adscripción	[2] Laboratorio de Metabolismo de Lípidos, Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias de la Salud, Villahermosa, Tabasco, México. [3] Universidad Juárez Autónoma de Tabasco, División Académica Multidisciplinaria de Comalcalco, Tabasco, México. [4] Laboratorio de Genómica de las Enfermedades Psiquiátricas y Neurodegenerativas, Instituto Nacional de Medicina Genómica, Ciudad de México, México. [5] Hospital Psiquiátrico Infantil, Dr. Juan N. Navarro, Ciudad de México, México.
Resumen	**Purpose:** Cognitive domains are affected in patients with schizophrenia. Mitochondrial dysfunction has been proposed as a possible origin of these symptoms. Cell-free mitochondrial DNA (cf-mtDNA) is an indicator of cellular stress, and it can be identified in individuals with age-associated disorders, this study aimed to explore the presence of cf-mtDNA in plasma of schizophrenia patients and its association with cognitive deficit. **Patients and methods:** Ninety-nine subjects were clinically evaluated; the case group included 60 patients diagnosed with schizophrenia and 39 randomly-individuals without psychiatric disorders were included in the comparison group. Cognitive status (MoCA scale) and cell-free mtDNA in blood plasma were assessed and quantified in both groups. **Results:** From the original sample, cf-mtDNA was identified in 43 subjects, 40 patients with schizophrenia and 3 controls ($X^2 = 31.10$, p-value < 0.0001). Thirty-nine out of forty patients with schizophrenia had a cognitive deficit. **Conclusion:** According to our findings, cognitive impairment and presence of cf-mtDNA were related in subjects with schizophrenia. Thus, while the cognitive deficit might reflect an accelerated aging process, the cf-mtDNA plays a role as a potential biomarker in this mechanism.
Palabras claves	cell free mitochondrial DNA; cognitive impairment; mitochondrial dysfunction; schizophrenia.

Revista	**JOURNAL OF ANIMAL AND PLANT SCIENCES-JAPS**
ISSN	2309-8694
DOI	https://doi.org/10.36899/JAPS.2024.4.0772
Título del Artículo	Comparison Of Proximate Composition, Phytochemical Contents, Antioxidant Capacity and Polyphenols in *Brosimum Alicastrum* Leaf, Fruit and Seed
Autores e instituciones de adscripción	J. C. Canto Pinto [1]; N. I. Pat Moreno [1]; V. M. Moo Huchin [2]; E. Pérez Pacheco [1]; A. J. Chay Canul [3]; R. J. Estrada León [1]; E. Sauri Duch [2]; C. R. Ríos Soberanis [4] [1] Tecnológico Nacional de México Instituto Tecnológico Superior de Calkiní, Calkiní, Campeche, México. [2] Tecnológico Nacional de México Instituto Tecnológico de Mérida, Mérida, Yucatán, México. [3] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Villahermosa, México. [4] Unidad de Materiales, Centro de Investigación Científica de Yucatán, A. C., Mérida, Yucatán, México.
Resumen	Ramon nut (*B. alicastrum*) is known to contain bioactive compounds and has been used for medicinal and food purposes for millennia. In the present study the objectives were to quantify and compare the proximal composition, phytochemical contents, *in vitro* antioxidant capacity and individual phenolic compounds in *B. alicastrum* leaf, fruit peel, seed and seed coat. Patterns were recognized using canonical discriminant analysis. After freeze-drying, proximate analyses were done. Phenolic compounds in the leaf, fruit peel, seed and seed coat of *B. alicastrum* were identified by HPLC-UV. Leaf had the highest ash, lipid and protein contents, seed coat had high crude fiber content and seeds high carbohydrates content. The highest (33.13 %) and lowest (4.77 %) yields of extraction (compounds) were obtained from the fruit peels and seed coat, respectively. Phytochemical screening revealed abundant terpenes and tannins in leaf tissue, and abundant sterols in seed coat. Total phenolic content (TPC) was highest ($P \leq 0.05$) in seeds (19.74 mg gallic acid equivalent GAE/g) and total flavonoids content (TFC) was highest ($P \leq 0.05$) in leaves (16.62 mg quercetin equivalent QE/g). The highest DPPH antioxidant capacity was identified in seed coat and the highest reducing power (RP) in leaf and fruit peel. The HPLC analysis identified caffeic acid as the most abundant phenolic compound in leaves, gallic acid as the most abundant in seeds, chlorogenic acid in seed coat and 3-hydroxytyrosol in fruit peel. Linear discriminant analysis (LDA) effectively differentiated the samples by tissue. Proximal chemical composition and bioactive compounds contents differed between *B. alicastrum* tissues, but they all contain bioactive compounds with antioxidant potential, highlighting their potential applications in food and non-food systems.
Palabras claves	Antioxidants; phytochemicals; plant-extracts; Ramón

Revista	**AIMS MATHEMATICS**
ISSN	2473-6988
DOI	https://doi.org/10.3934/math.20241461
Título del Artículo	Bifurcation analysis for the coexistence in a Gause-type four-species food web model with general functional responses
Autores e instituciones de adscripción	Jorge Luis Ramos Castellano [1]; Miguel Ángel de la Rosa [2]; Iván Loreto Hernández [2] [1] División Academica de Ciencias Basicas, Universidad Juarez Autonoma de Tabasco, Km. 1, Carretera Cunduacan-Jalpa de Mendez, c.p.86690, Cunduacan, Tabasco, Mexico. [2] Division Academica de Ciencias Basicas, Consejo Nacional de Humanidades, Ciencias y Tecnologias-Universidad Juarez Autonoma de Tabasco, Km. 1, Carretera Cunduacan-Jalpa de Mendez, c.p. 86690, Cunduacan, Tabasco, Mexico
Resumen	The dynamics of an ordinary diferential equations (ODEs) system modelling the interaction of four species (one prey or resource population, two mesopredator populations, and one super-predator population) was analyzed. It was assumed that the functional responses for each interaction were general. We showed parameter conditions that ensured that the diferential system underwent a supercritical Hopf bifurcation or a Bogdanov-Takens bifurcation, from which the coexistence of the four species was guaranteed. In addition, the results were illustrated by several applications, where the prey had a logistic growth rate. For the interaction of the mesopredators and prey, we considered classical Holling-type functional responses, and for the rest of the interactions, we proposed certain generalized functional responses similar to the well-known “Beddington-DeAngelis” or “Crowley-Martin” functional responses. At the end, some numerical simulations were given.
Palabras claves	Four-dimensional food web model; Hopf bifurcation; Bogdanov-Takens bifurcation; coexistence of species; generalized functional responses

Revista	**ANIMAL FRONTIERS**
ISSN	2160-6056
DOI	https://doi.org/10.1093/af/vfae034
Título del Artículo	The role of artificial intelligence in Latin American ruminant production systems
Autores e instituciones de adscripción	Einar Vargas Bello Pérez [1,2]; Oscar R. Espinoza Sandoval [1]; Manuel González Ronquillo [3]; Juan Carlos Ángeles Hernández [4]; Alfonso J Chay Canul [5]; Héctor Aarón Lee Rangel [6]; Germán Danilo Amaya [7]; Juan Pablo Keim [8]; Javier Baudracco [9]; Ricardo Augusto Mendonça Vieira [10]; Navid Ghavipanje [11] [1] Facultad de Zootecnia y Ecología, Universidad Autónoma de Chihuahua, Chihuahua, México. [2] Department of International Development, School of Agriculture, Policy and Development, University of Reading, Reading, UK. [3] Facultad de Medicina Veterinaria y Zootecnia, Departamento de Nutrición Animal, Universidad Autónoma del Estado de México, Toluca, México. [4] Departamento de Medicina y Zootenia de Rumiantes, Facultad de Medicina Veterinaria y Zootecnia, Universidad Nacional Autónoma de México, Mexico City, CP. 04510, Mexico. [5] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México. [6] Facultad de Agronomía y Veterinaria, Universidad Autónoma de San Luis Potosí, San Luis Potosí, Mexico. [7] Department of School of Agriculture, Policy and Development, University of Reading, Reading, UK. [8] Faculty of Agricultural Sciences, Animal Production Institute, Universidad Austral de Chile, Valdivia, Chile. [9] IciAgro Litoral, Universidad Nacional del Litoral-CONICET, Kreder 2805 Esperanza (3080), Argentina. [10] Laboratório de Zootecnia, Centro de Ciências e Tecnologias Agropecuárias (CCTA), Universidade Estadual do Norte Fluminense Darcy Ribeiro (UENF), Campos dos Goytacazes, RJ, Brazil. [11] Faculty of Agriculture, Department of Animal Science, University of Birjand, Birjand, Iran.
Resumen	**Introduction.** Today, cutting-edge technologies—internet of things (IoT), big data, cloud computing, and artificial intelligence (AI)—play a forefront role in sustainable livestock production (Morrone et al., 2022; Dayoub et al., 2024; Melak et al., 2024). AI, a subfield of computer science that simulates human intelligence enables real-time monitoring and analytical processing in the ruminant sector to boost production efficiency and animal welfare (Neethirajan, 2023; Dayoub et al., 2024). With over 360 million head of cattle, Latin America is a key driver in global ruminant production and represents a remarkable agricultural frontier over the past 50 years (Figueroa et al., 2022). While Latin America makes up only 16% of the global population, it accounts for 23% of beef cattle and 24%

Resumen	of dairy cattle production worldwide, generating 30% of the planet's meat and 28% of its bovine milk (FAO, 2021). Hence, the ruminant sector in this region drives 46% of the agricultural gross domestic product (GDP; Figueroa et al., 2022). For long-term sustainable planning of the ruminant sector in Latin America, aligning with global trends is essential. AI is already applied in Latin American agriculture for precision farming, predictive analytics, supply chain optimization, resource management, and market forecasting (Vitón et al., 2019; Silvi et al. 2021; Puntel et al., 2022). Although compared to the leading countries (the United States and China) that have adopted AI in agriculture, this region is lagging in the development of smart technologies, and there is a need for academia to respond to the existing gaps together with the industry. Below we summarized AI impacts on Latin American ruminant systems, informing priority-setting in upcoming research initiatives and policy frameworks promoting AI adoption.
Palabras claves	Artificial intelligence; machine learning; new technologies; ruminants; sustainability

Revista	**APPLIED SYSTEM INNOVATION**
ISSN	2571-5577
DOI	https://doi.org/10.3390/asi7060112
Título del Artículo	Using IoT for Cistern and Water Tank Level Monitoring
Autores e instituciones de adscripción	Miguel A. Wister [1]; Ernesto León [1]; Alejandro Alejandro Carrillo [1]; Pablo Pancardo [1]; José A. Hernández Nolasco [1] [1] Academic Division of Information Sciences and Technologies, Juarez Autonomous University of Tabasco (UJAT), Cunduacan 86690, Mexico
Resumen	This paper proposes an experimental design to publish online the measurements obtained from four sensors: one sensor inside a cistern measures the level of drinking water, another sensor in a water tank monitors its level, a third sensor measures water flow or pressure from the pipes, and a fourth sensor assesses water quality. Several tank filling and emptying tests were performed. Experimental results demonstrated that if the cistern perceived that there was no water in the tank, it turned on the water pump to fill the tank to 100% of its storage capacity; while this was happening, the water level in the cistern and tank, the flow of water from the piped water, and the quality of the water could be visualized on a dashboard. In short, this proposal monitors water levels and flows through the Internet of Things. Data collected by sensors are posted online and stored in a database.
Palabras claves	IoT; Internet of Things; water flow sensor; water level sensor; water quality sensor; water-saving; water tank

Revista	**NURSING REPORTS**
ISSN	eISSN: 2039-4403
DOI	https://doi.org/10.3390/nursrep14040261
Título del Artículo	Evaluation of Attitudinal Beliefs Held by Medical and Nursing Students Towards Suicidal Behavior
Autores e instituciones de adscripción	Thelma Beatriz González Castro [1]; María Lilia López Narváez [2]; Ana Fresán [3]; Carlos Alfonso Tovilla Zárate [2]; Alma Delia Genis Mendoza [4]; Humberto Nicolini [5]; Juan Pablo Sánchez de la Cruz [6]; Yazmín Hernández Díaz [1] [1] División Académica Multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, Jalpa de Méndez, Tabasco 86025, Mexico [2] División Académica Multidisciplinaria de Comalcalco, Universidad Juárez Autónoma de Tabasco, Comalcalco, Tabasco 86025, Mexico [3] Subdirección de Investigaciones Clínicas, Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz, Ciudad de México 14370, Mexico [4] Servicio de Atención Psiquiátrica, Hospital Psiquiátrico Infantil Dr. Juan n. Navarro, Ciudad de México 14080, Mexico [5] Laboratorio de Genómica de Enfermedades Psiquiátricas y Neurodegenerativas, Instituto Nacional de Medicina Genómica, Ciudad de México 14610, Mexico [6] Salud Ocupacional e Higiene, Planta de Concretos Cancún 1, Holcim México Operaciones, Cancún 05348, Mexico

Resumen	**Background/Objectives:** A favorable attitude towards suicidal behavior is associated with an increased risk of suicidal behavior in youth populations. Hence, the aim of the present study was to analyze attitudinal beliefs about suicidal behavior among Mexican medical and nursing students. We also compared attitudinal beliefs about suicidal behavior according to the religious affiliation of the participants. **Methods:** This is a cross-sectional observational study. Attitudinal beliefs about suicidal behavior were assessed using the Attitudinal Beliefs Questionnaire about Suicide Behavior (CCCS-18). We evaluated personal and family histories of suicide using the Spanish version of the MINI International Neuropsychiatric Interview. Comparative analysis between nursing and medical students was performed, using Chi-square tests for categorical variables and Student t-tests for continuous variables. **Results:** A total of 195 (52.2%) medical students and 178 (47.8%) nursing students participated. Medicine students reported a higher prevalence of a family history of suicide attempts and knowing someone who had tried to die by suicide compared to nursing students ($p = 0.001$). Regarding attitudinal beliefs—specifically, suicide in terminal patients—medical students reported higher scores than nursing students (9.50 ± 5.91 vs. 11.23 ± 6.38, $p < 0.001$), while the latter exhibited higher scores in attitudinal beliefs related to suicide itself (9.55 ± 4.45 vs. 7.28 ± 4.09, $p < 0.001$). Both groups display similar scores when compared by religious affiliation. **Conclusions:** Our findings show differences in attitudinal beliefs about suicidal behavior between medical and nursing students. Medical students exhibited more positive responses toward suicide in terminal patients, while nursing students had higher values for attitudinal beliefs related to suicide itself. These results could be considered in the planning of health sciences curricula in order to positively impact future suicide prevention efforts. This study was retrospectively registered at the Universidad Juarez Autónoma de Tabasco, with the registration number 20240063 on 8 June 2024.
Palabras claves	Nursing; medical; students; suicide; attitudinal beliefs

Revista	**MATHEMATICAL AND COMPUTATIONAL APPLICATIONS**
ISSN	eISSN: 2297-8747
DOI	https://doi.org/10.3390/mca29060103
Título del Artículo	An Experimental Comparison of Self-Adaptive Differential Evolution Algorithms to Induce Oblique Decision Trees
Autores e instituciones de adscripción	Rafael Rivera López [1]; Efrén Mezura Montes [2]; Juana Canul Reich [3]; Marco Antonio Cruz Chávez [4] [1] Departamento de Sistemas y Computación, Tecnológico Nacional de México, Instituto Tecnológico de Veracruz, Veracruz 91897, Mexico [2] Instituto de Investigaciones en Inteligencia Artificial, Universidad Veracruzana, Xalapa 91097, Mexico [3] División Académica de Ciencias y Tecnologías de la Información, Universidad Juárez Autónoma de Tabasco, Cunduacán 86690, Mexico [4] Centro de Investigación en Ingeniería y Ciencias Aplicadas, Universidad Autónoma del Estado de Morelos, Cuernavaca 62209, Mexico
Resumen	This study addresses the challenge of generating accurate and compact oblique decision trees using self-adaptive differential evolution algorithms. Although traditional decision tree induction methods create explainable models, they often fail to achieve optimal classification accuracy. To overcome these limitations, other strategies, such as those based on evolutionary computation, have been proposed in the literature. In particular, we evaluate the use of self-adaptive differential evolution variants to evolve a population of oblique decision trees encoded as real-valued vectors. Our proposal includes (1) an alternative initialization strategy that reduces redundant nodes and (2) a fitness function that penalizes excessive leaf nodes, promoting smaller and more accurate decision trees. We perform a comparative performance analysis of these differential evolution variants, showing that while they exhibit similar statistical behavior, the Single-Objective real-parameter optimization (jSO) method produces the most accurate oblique decision trees and is second best in compactness. The findings highlight the potential of self-adaptive differential evolution algorithms to improve the effectiveness of oblique decision trees in machine learning applications.
Palabras claves	Machine learning; evolutionary computation; explainable artificial intelligence

Revista	**CATALYSTS**
ISSN	2073-4344
DOI	https://doi.org/10.3390/catal14120896
Título del Artículo	Titanium Dioxide 1D Nanostructures as Photocatalysts for Degradation and Removal of Pollutants in Water
Autores e instituciones de adscripción	Dora María Frías Márquez [1]; José Ángel Méndez González [1]; Rosendo López González [1]; Cinthia García Mendoza [1]; Francisco Javier Tzompantzi Morales [2]; Patricia Quintana Owen [3]; Mayra Angélica Álvarez Lemus [4] [1] Nanotechnology Laboratory, Academic Division of Engineering and Architecture, Juarez Autonomous University of Tabasco, Cunduacán 86690, Mexico [2] Laboratory of Catalysis, Autonomous Metropolitan University Iztapalapa, San Rafael Atlixco 186, Leyes de Reforma 1ra Secc, Iztapalapa, Mexico City 09340, Mexico [3] Applied Physics Department, CINVESTAV-Mérida, Carr. Progreso AP 73, Mérida 97310, Mexico [4] Laboratory of Bioassays and Environmental Tests, Academic Division of Engineering and Architecture,
Resumen	The oxidation of organic pollutants in water is the most reported application of a Titanium dioxide (TiO_2) photocatalyst. During the last decade, photoreduction with TiO_2 has also been explored but simultaneous capabilities for unmodified TiO_2 have not been reported yet. Here, we reported on the fabrication of TiO_2 nanorods using hydrothermal treatment and compared the effect of two different TiO_2 powders as the starting material: P-25 and TiO_2 sol–gel (N-P25 and N-TiO_2, respectively) which were further calcined at 400 °C (N-P25-400 and N-TiO_2-400). XPS and XRD analyses confirmed the presence of sodium and hydrogen titanates in N-P25, but also an anatase structure for N-TiO_2. The specific surface area of the calcined samples decreased compared to the dried samples. Photocatalytic activity was evaluated using phenol and methyl orange for degradation, whereas 4-nitrophenol was used for photoreduction. Irradiation of the suspension was performed under UV light (λ = 254 nm). The results demonstrated that the nanorods calcined at 400 °C were more photoactive since methyl orange (20 ppm) degradation reached 86% after 2 h, when N-TiO_2-400 was used. On the other hand, phenol (20 ppm) was completely degraded by the presence of N-P25-400 after 2 h. Photoreduction of 4-nitrophenol (5 ppm) was achieved by the N-TiO_2-400 during the same period. These results demonstrate that the presence of Ti^{3+} and the source of TiO_2 have a significant effect on the photocatalytic activity of TiO_2 nanorods. Additionally, the removal of methylene blue (20 ppm) was performed, demonstrating that N-TiO_2 exhibited a high adsorption capacity for this dye.
Palabras claves	TiO_2 nanorods; hydrothermal method; photo-oxidation; photoreduction; adsorption capacity

Revista	**CATALYSTS**
ISSN	2073-4344
DOI	https://doi.org/10.3390/catal14120928
Título del Artículo	Increasing SBA-15 Amphoteric Properties by Direct Zr Addition During Synthesis
Autores e instituciones de adscripción	Romeo Hernández [1]; José Escobar [2]; José G. Pacheco [1]; José G. Torres [1]; David S. García [3]; Zenaida Guerra [4]; Paz del Ángel [2]; María C. Barrera [5]; Durvel de la Cruz [1] [1] División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco (UJAT), Carretera Cunduacán-Jalpa km 1 Col. La Esmeralda, Cunduacán 86690, Tabasco, Mexico [2] Instituto Mexicano del Petróleo, Eje Central Lázaro Cárdenas Norte 152, San Bartolo Atepehuacan, G.A. Madero, Ciudad de Mexico 07730, Mexico [3] División Académica Multidisciplinaria de Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco (UJAT), Carretera Estatal Libre Villahermosa—Comalcalco, km 27+000 s/n Ranchería Ribera Alta, Jalpa de Méndez 86205, Tabasco, Mexico [4] Tecnológico Nacional de Mexico-Instituto Tecnológico de Villahermosa (TECNM—I. T. Villahermosa), Laboratorio de Investigación 1 Área de Nanotecnología, km. 3.5 Carretera Villahermosa-Frontera, Cd. Industrial, Villahermosa 86010, Tabasco, Mexico [5] Facultad de Ciencias Químicas, Campus Coatzacoalcos, Universidad Veracruzana, Av. Universidad km. 7.5, Col. Santa Isabel, Coatzacoalcos 96538, Veracruz, Mexico
Resumen	Strategies followed to improve SBA-15 surface (essentially inert) included modifications by adding acidic or basic (or both) species during or after silica synthesis. Amphoteric properties are especially important, as some reactions (alcohol dehydration, for instance) require both types of sites to efficiently take place. In this work, single Zr (nominal 3, 5, and 10 wt%, as $ZrOCl_2 \cdot 8H_2O$) direct addition during SBA-15 synthesis was used to impart amphoteric characteristics (as determined by NH_3 and CO_2 TPD) to mesostructured SiO_2 matrices. Additional materials characterization included textural (N_2 physisorption) and structural (XRD, FTIR, and UV–Vis spectroscopies, and HRTEM as well) studies.

Resumen	Actual solids composition was also determined (EDS). The degree of Zr incorporation into mesoporous silica was enhanced with nominal content in binary formulations, although not necessarily integrated into SBA-15 walls forming Zr-O-Si linkages. It seemed that single ZrO_2 domains (framework and extra-framework) could provide suitable amphoteric properties by significantly increasing the number and strength of both acid and basic sites (especially formulations containing nominal 5 wt% Zr), as to those over mesostructured silica matrices. Also, potentially deleterious strong acid sites were avoided. The binary oxides present great potential to be applied in reactions requiring vicinal acid–base pairs (alcohol dehydration, for instance).
Palabras claves	Zirconia; SBA-15; amphoteric properties; surface acidity–basicity

Revista	**DISCOVER SUSTAINABILITY**
ISSN	2662-9984
DOI	https://doi.org/10.1007/s43621-024-00748-8
Título del Artículo	Ecological significance of a new record of *Vallisneria americana* Michx. in the conservation and sustainability of the Usumacinta Fluvial System
Autores e instituciones de adscripción	Sánchez, Alberto J. [1]; Florido, Rosa [1]; Hernández Trejo, Humberto [2]; Álvarez Pliego, Nicolás [1]; Salcedo, Miguel Ángel [1]; Barba, Everardo [3] [1] Diagnóstico y Manejo de Humedales Tropicales, División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Tabasco, México. [2] Ecología, Restauración y Manejo de Comunidades Tropicales, División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Tabasco, México. [3] Manejo Sustentable de Cuencas y Zonas Costeras, El Colegio de la Frontera Sur, Tabasco, México.
Resumen	The American eelgrass *Vallisneria americana* is a submersed rooted macrophyte that is widely distributed throughout North America. As a structured habitat, it shelters a high biodiversity of aquatic fauna and acts like a carbon sink. However, its populations have drastically decreased or disappeared in the free-flowing Usumacinta Fluvial System. Physicochemical parameters in water, measurements of quantitative habitat complexity, and records of fish collected were quantified for a *V. americana* patch. A low average density of 96 ± 48 stems/m^2, 61.7 ± 0.9 $g_{ash\ free\ dry\ weight}$/$m^2$ of biomass, and 192 ± 42.3 male inflorescences/m^2 were recorded for this 14 m^2 patch. Six fish species of the Poeciliidae and Cichlidae families were collected, with an average density of 19 ± 1.9 org/m^2, all smaller than 6.3 cm standard length. This first record of *V. americana* in the transitional longitudinal zone (20–60 MASL) of the Usumacinta Fluvial System reinforces the importance of the Wanhá Biosphere Reserve (WBR), which was decreed mainly for its relict inland red mangrove populations and high diversity of tropical swamp woody communities. Moreover, the American eelgrass patch is a nursery area for at least six native poeciliids and cichlids. These are the two most diverse fish families in Mesoamerica. In addition, the cichlid fishery is an important component for environmental sustainability.
Palabras claves	Submersed rooted macrophyte; Structured hábitat; Freshwater nursery área; Mesoamerica

Revista	**MRS ADVANCES**
ISSN	2059-8521
DOI	https://doi.org/10.1557/s43580-024-01006-9
Título del Artículo	Physicochemical and energy characterization of solid biofuels based on carpentry wood residues of Tabasco, Mexico
Autores e instituciones de adscripción	González Canché, Nancy Guadalupe [1]; Van der Wal, Johannes Cornelis [2]; Ek-Pérez, Javier [3]; Pampillón González, Liliana [3] [1] CONAHCYT-El Colegio de la Frontera Sur, Departamento de Agricultura, Sociedad y Ambiente, Unidad Villahermosa, Carretera Villahermosa-Reforma, Km 15.5, Ranchería Guineo II Sección, 86280, Villahermosa, Tabasco, México [2] Departamento de Agricultura, Sociedad y Ambiente, Unidad Villahermosa, El Colegio de la Frontera Sur, Carretera Villahermosa-Reforma, Km 15.5, Rancheria Guineo II Sección, 86280, Villahermosa, Tabasco, México. [3] División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Carretera Villahermosa-Cárdenas, Km 0.5, Entronque Bosques de Saloya, 86150, Villahermosa, Tabasco, México.

Resumen	In rural Mexico, firewood meets 72% of families' energy demand. As deforestation and high prices of firewood deepen energy poverty, we analyze whether solid biofuels produced from wood residues of furniture carpentry in Tabasco, Mexico may complement energy provision from firewood. We determined proximal, energy, and physicochemical properties in wood residues and solid biofuels. Wood residues showed low ash content (< 2.86%) and attractive energy content (> 17,041 kJ/kg). The solid biofuels obtained fulfilled the ISO 17225 standard for biomass pellets. Solid biofuels showed 17% higher energy properties than their raw materials. Pellets of commonly used tree species had similar thermal behavior and elemental composition and attractive mechanical properties for handling and transportation processes. Our results show that the transformation of carpentry residues in solid biofuels is a technically feasible alternative to complement the use of firewood in rural communities and thus contribute to mitigating energy poverty based on local biomass resources. Physicochemical and energy characterization of solid biofuels based on carpentry wood residues of Tabasco, Mexico Physicochemical and energy characterization of solid biofuels based on carpentry wood residues of Tabasco, Mexico.
Palabras claves	N/A

Revista	**MRS ADVANCES**
ISSN	2059-8521
DOI	https://doi.org/10.1557/s43580-024-00976-0
Título del Artículo	Design of a soundproof painting based on microcellulose for potential automotive applications
Autores e instituciones de adscripción	Sosa Castillo, F. [1]; Palma Ramírez, D. [1]; García Zaleta, D. S. [2]; [1] Instituto Politécnico Nacional IPN, Unidad Profesional Interdisciplinaria de Ingeniería (UPIIH-IPN), Carretera Pachuca-Actopan Kilómetro 1+500, C.P. 42162, Hidalgo, México [2] División Académica Multidisciplinaria de Jalpa de Méndez, Carretera Cunduacán–Jalpa de Méndez, Universidad Juárez Autónoma de Tabasco, Km 1, Col. La Esmeralda, 86690, Villahermosa, Tabasco, México
Resumen	Sound pollution is a problem affecting our environment in different ways, and human health is why there is a need to prevent it, for example, in the automotive sector. Various materials are being designed to solve this. This work deals with developing a material to prevent sound pollution in a vehicle cabin without changing the capacity to hear the essential external alerts while driving. To reach it, microcellulose (MCC) particles are proposed to be incorporated in 0. 1, 1, 3, and 5 wt% into a commercial automotive paint based on acrylic through ultrasonic process dispersion and used as coating onto aluminum alloys typically employed for bodyworks. Humidity measurements, X-ray diffraction (XRD), Raman spectroscopy, confocal laser scanning (CLSM), optical microscopy, and preliminary soundproof tests are discussed. The addition of 5 wt% MCC into the paint was found to be the optimal sample.
Palabras claves	N/A

Revista	**INTERNATIONAL JOURNAL OF MODERN PHYSICS A**
ISSN	0217-751X
DOI	https://doi.org/10.1142/S0217751X24501318
Título del Artículo	A stellar model in Rastall gravity with perfect fluid
Autores e instituciones de adscripción	Paulin Fuentes, Jorge Mauricio [1]; Estévez Delgado, Joaquín [2]; Cabrera, José Vega [2]; Rodríguez Ceballos, Joel Arturo [3]; Soto Espitia, Rafael [4] [1] División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Carretera Cunduacán-Jalpa Km. 1 Col. La Esmeralda, CP. 86690, Cunduacán, Tabasco, México. [2] Facultad de Ciencias Físico Matemáticas de la Universidad Michoacana de San Nicolás de Hidalgo, Edificio B, Ciudad Universitaria, CP 58030, Morelia Michoacán, México. [3] Facultad de Químico Farmacobiología de la Universidad Michoacana de San Nicolás de Hidalgo, Tzintzuntzan No. 173, Col. Matamoros, C.P. 58240, Morelia Michoacán, México. [4] Facultad de Ingenieria Civil de la Universidad Michoacana de San Nicolás de Hidalgo Edificio A, Ciudad Universitaria, CP 58030, Morelia Michoacán, México

Resumen	In this paper, we present the construction and analysis of an interior solution for a compact star in Rastall gravity. The space-time considered is static and spherically symmetric, meanwhile, the source of matter is that of a perfect fluid. The solution of the equations system which describes the model is obtained from a specific form of the red shift factor function and its result is physically acceptable. The analysis of the solution is focused on the description of the star PSR J0348+0432, for which we know the observational data of mass M=(2.01±0.04)MΘ and radius R=(12.5095±0.4475)km, a comparison with the behavior of the solution in the frame of Einstein's general relativity theory, λ=1, shows that for λ>1 the density, pressure and speed of sound are greater, meanwhile for λ<1 their values are lower. The analysis of the generalized TOV equation to the case of the Rastall gravity implies that the contribution of the force associated to the Rastall parameter can generate an attractive (λ>1) or repulsive (λ<1) force, showing the relevance and the effect that the Rastall parameter has in stellar models
Palabras claves	Rastall gravity; exact solutions; perfect fluid; 04.20.Jb; 04.50.Kd; 04.40.Dg; Exact solutions; Modified theories of gravity; Relativistic stars: structure stability and oscillations

Revista	**LATIN AMERICAN JOURNAL OF AQUATIC RESEARCH**
ISSN	0718-560X
DOI	https://doi.org/10.3856/vol52-issue5-fulltext-3205
Título del Artículo	Inclusion of yeast *Candida tropicalis* and *Debaryomyces hansenii* in diets for tropical gar (*Atractosteus tropicus*) juveniles: effect on growth, digestive enzymatic activity, intestinal barrier gene expressions, and gut microbiota
Autores e instituciones de adscripción	Graciela M. Pérez Jiménez [1]; Susana de la Rosa García [2]; Marcel Martínez Porchas [3]; César A. Sepúlveda Quiroz [1,4]; Estefanía Garibay Valdez [3]; Dariel Tovar Ramírez [5]; Luis D. Jiménez Martínez [6]; Carina Shianya Alvarez Villagómez [1]; Carlos A. Alvarez González [1] [1] Laboratorio de Fisiología en Recursos Acuáticos (LAFIRA), DACBIOL-UJAT Villahermosa, Tabasco, México [2] Laboratorio de Microbiología Aplicada, DACBIOL-UJAT, Villahermosa, Tabasco, México [3] Centro de Investigación en Alimentación y Desarrollo, A.C, Hermosillo, Sonora, México [4] Tecnológico Nacional de México Campus Villahermosa, Villahermosa, Tabasco, México [5] Centro de Investigaciones Biológicas del Noroeste SC, CIBNOR, La Paz, Mexico [6] Laboratorio de Biología Molecular, DAMJ-UJAT, Jalpa de Méndez, Tabasco, México
Resumen	Including probiotic yeasts, such as *Debaryomyces hansenii*, in fish diets improves aquaculture production and fish health. Some fish-isolated yeasts, like *Candida tropicalis*, produce antimicrobial metabolites. However, there have been no reports on their *in vivo* effects. We evaluated the effects of dietary administration of both yeasts on growth, survival, digestive enzyme activity, expression of intestinal barrier genes, and intestinal microbiota composition in *Atractosteus tropicus* juveniles. We administered diets with three concentrations of *C. tropicalis* (10^4, 10^6, and 10^8 CFU g^{-1}), three with *D. hansenii* (10^3, 10^5, and 10^7 CFU g^{-1}), and a control diet without yeast for 45 days. We also evaluated the antagonistic capacity of both yeasts against fish pathogens *in vitro*. Results showed that lower doses of *C. tropicalis* (10^4 CFU g^{-1}) and *D. hansenii* (10^3 CFU g^{-1}) improved growth, survival, and lipase activity. However, *C. tropicalis* compromised intestinal barrier integrity by reducing zo-1 expression and increasing *il-8* expression while altering the microbiota to favor Desulfovibrionaceae. Conversely, *D. hansenii* enhanced intestinal barrier integrity by increasing the expression of *muc-2*, *zo-1*, and *il-10* genes and decreasing il-8 expression without altering the microbiota, where Mycoplasma predominated. Both yeasts showed antagonistic activity against pathogens. In conclusion, the dietary inclusion of *C. tropicalis* did not favor the intestinal health of the fish. Conversely, *D. hansenii* at a concentration of 10^3 CFU g^{-1} is recommended to improve the growth, digestive function, and health of *A. tropicus* juveniles.
Palabras claves	*Candida tropicalis*; *Debaryomyces hansenii*; yeast probiotic; intestinal microbiota; tropical gar

Revista	**PROCESSES**
ISSN	2227-9717
DOI	https://doi.org/10.3390/pr12112523
Título del Artículo	Temperature Effect of Cocoa (*Theobroma cacao* L.) Drying on Energy Consumption, Bioactive Composition and Vibrational Changes
Autores e instituciones de adscripción	David J. Jiménez Rodríguez [1,2]; Pedro García Alamilla [3]; Facundo J. Márquez Rocha [4]; Rubén Vázquez Medina [1]; Areli Carrera Lanestosa [3]; Fanny A. González Alejo [3]; Carlos A. Sánchez Ramos [2]; Franco L. Ruiz Santiago [5] [1] Instituto Politécnico Nacional, Centro de Investigación en Ciencia Aplicada y Tecnología Avanzada Unidad Querétaro (CICATA Qro), Cerro Blanco 141, Colinas del Cimatario, Santiago de Querétaro 76090, Querétaro, Mexico [2] Instituto Politécnico Nacional, Centro Mexicano Para la Producción más Limpia, Unidad Tabasco, Tabasco Business Center, Edificio FINTAB, Carr. Reforma-Dos Bocas, Km 17.920, Ra. Pechucalco, 2da. sección, Cunduacán 86691, Tabasco, Mexico [3] División Académica de Ciencias Agropecuarias (DACA), Universidad Juárez Autónoma de Tabasco (UJAT), Carret. Villahermosa-Teapa Km 25, Ra. La Huasteca, Villahermosa 86280, Tabasco, Mexico [4] Instituto Politécnico Nacional, Unidad Profesional Interdisciplinaria de Ingeniería Campus Hidalgo (UPIIH), Carretera Pachuca—Actopan Km. 1+500, San Agustín Tlaxiaca 42162, Hidalgo, Mexico [5] Instituto Politécnico Nacional, Centro de Investigación en Biotecnología Aplicada (CIBA), Ex-Hacienda San Juan Molino Carretera Estatal Tecuexcomac-Tepetitla Km 1.5, Tlaxcala 90700, Tlaxcala, Mexico
Resumen	Cocoa drying is the post-harvest thermal process used to condition the beans to a moisture content between 6.5 and 7% for storage and further processing. Convective drying is an energy-intensive process where time and temperature are considered critical factors for the degradation of bioactive compounds in edible products. In the present study, the energy parameters, vibrational spectroscopy, and changes in bioactive compounds of cocoa beans were studied during thin-layer hot air drying at 50 °C, 60 °C, and 70 °C. Moisture loss, specific energy consumption (SEC), energy efficiency, total phenolics (TPs), total flavonoids (TFs), and antioxidant activity (DPPH) were determined. Fourier transform infrared (FT-IR) spectroscopy with attenuated total reflectance (ATR) was used to characterize the samples, and a multivariate analysis was applied to find interactions among the components. The obtained SEC was 18,947.30–24,469.51 kJ/kg, and the energy efficiency was 9.73–12.31%. When the temperature was 70 °C, the best values for SEC and energy efficiency were obtained. The results also showed that the convective drying generated changes in the TP levels for the three temperatures, mainly after 300 min, with maximum levels between 360 and 600 min, at 70 °C; however, it does not have a clear relationship with the TFs and the antioxidant activity. The FT-IR and the multivariate analysis revealed changes in several signals in the 1800 to 400 cm^{-1} range, confirming the variation in the associated signal with phenolic compounds.
Palabras claves	Moisture loss; convective drying; energy efficiency; FT-IR; multivariate analysis; total phenolics; total flavonoids; antioxidant activity

Revista	**BRAIN SCIENCES**
ISSN	2076-3425
DOI	https://doi.org/10.3390/brainsci14111103
Título del Artículo	Stimulation of Dopamine D4 Receptors in the Nucleus Accumbens Shell Increases Palatable Food Intake in Satiated Male Rats: Modulation by NMDA and AMPA Receptors
Autores e instituciones de adscripción	Refugio Cruz Trujillo [1,2]; Daniel Díaz Urbina [3,4]; José Alfredo Díaz Gandarilla [5]; Dolores Guadalupe Vidal López [6]; Rodrigo Erick Escartín Pérez [4]; Juan Manuel Mancilla Diaz [4]; Benjamín Florán [7]; Juan Gabriel Tejas Juárez [5] [1] Escuela de Ciencias Químicas, Universidad Autónoma de Chiapas (UNACH), Carretera Panamericana Ocozocoautla-Cintalapa Km. 2.5, Ocozocoautla de Espinosa 29140, Mexico [2] Departamento de Químicos Farmacobiólogos, Universidad Pablo Guardado Chávez (UPGCH), Libramiento Norte Oriente No. 3450, Tuxtla Gutiérrez 29040, Mexico [3] Laboratory on Neurobiology of Compulsive Behaviors, NIMH, National Institutes of Health, Bethesda, MD 20892, USA [4] Laboratorio de Neurobiología de la Alimentación, Grupo de Investigación en Nutrición, División de Investigación y Posgrado de la FES Iztacala, UNAM, Ciudad de México 04510, Mexico [5] División Académica Multidisciplinaria de Comalcalco, Universidad Juárez Autónoma de Tabasco (UJAT), Comalcalco 86658, Mexico [6] Universidad de Ciencias y Artes de Chiapas (UNICACH), Tuxtla Gutiérrez 29014, Mexico [7] Centro de Investigación y de Estudios Avanzados del IPN, Departamento de Fisiología, Biofísica y Neurociencias, Ciudad de México 07360, Mexico

Resumen	**Background/Objectives:** Palatability significantly influences food consumption, often leading to overeating and obesity by activating the brain's reward systems. The nucleus accumbens (NAc) plays a central role in this process, modulating reward mechanisms primarily via dopamine through D2-like receptors (D2R, D3R, D4R). While the involvement of D2 receptors in feeding is well-documented, the role of D4 receptors (D4Rs) is less clear. **Methods:** Male Wistar rats received intra-NAc shell microinjections of the D4R agonist PD-168077 and the antagonist L-745870. This study also examined the modulation between D4R and glutamatergic transmission by administration of NMDA, NMDA receptor antagonist AP-5, AMPA, and AMPA receptor antagonist CNQX. **Results:** PD-168077 increased sweet solution intake by 46%, an effect that was reversed by L-745870. Pre-treatment with NMDA prevented the stimulatory effect of PD-168077, whereas the NMDA receptor antagonist AP-5 had no such effect. Additionally, AMPA administration reduced sweet solution intake by 63%, counteracting the effect of PD-168077, while the AMPA receptor antagonist CNQX, on its own, increased intake by 40%. **Conclusions:** These findings suggest that D4Rs promote hedonic feeding by modulating glutamatergic transmission in the NAc shell, highlighting the complexity of D4R involvement in food intake regulation. This study underscores the potential of targeting D4Rs for therapeutic interventions in eating disorders and obesity, though further research is essential to clarify the precise mechanisms through which D4R modulates AMPA and NMDA receptor activity in feeding behavior.
Palabras claves	Dopamine D4 receptor; NMDA receptor; AMPA receptor; nucleus accumbens shell; food intake; palatability; satiated rats

Revista	**MATERIALS**
ISSN	1996-1944
DOI	https://doi.org/10.3390/ma17225571
Título del Artículo	Mechanical Behavior of Masonry Mortars Reinforced with Disposable Face Mask Strips
Autores e instituciones de adscripción	René Sebastián Mora Ortiz [1]; Ebelia del Ángel Meraz [1]; Sergio Alberto Díaz [1]; Francisco Magaña Hernández [1]; Jazmín del Rosario Torres Hernández [1]; Mayra Agustina Pantoja Castro [1] [1] División Académica de Ingeniería y Arquitectura (DAIA), Universidad Juárez Autónoma de Tabasco, Carretera Cunduacán-Jalpa de Méndez km. 1, Cunduacán 86690, Tabasco, Mexico
Resumen	This research presents an experimental analysis of the mechanical behavior of masonry mortars incorporating disposable face masks (FMs) cut into two different sizes. The objective is to provide experimental data contributing to the consolidation of recycling FMs in mortar mixtures. To achieve this, two types of mixtures were prepared: one with strips of 3 × 3 mm and another with strips of 3 × 10 mm. These FM strips were added in different proportions by the volume of mortar (0%, 0.2%, 0.5%, 0.8%, 1.0%, and 1.5%). In all mortars, the dry bulk density, volume of permeable voids, and water absorption, as well as compressive, flexural, and tensile strengths, were evaluated after a 28-day water immersion curing period. Additionally, two essential properties in masonry mortars were analyzed: air content and shear bond strength. The results indicated that, for both strip sizes, adding FMs up to 0.2% positively affected the flexural and tensile strengths; concerning control mortar, increases of 6% and 1.4%, were recorded, respectively, for the longer strips. At this percentage, the density, air content, and compressive and shear bond strengths are not significantly affected. The results demonstrated that incorporating FMs into mortar mixtures is a promising avenue for sustainable recycling and helps reduce microplastic environmental contamination.
Palabras claves	Facial mask; circular economy; waste recycling; fiber-reinforced mortar; mechanical properties

Revista	**HEALTHCARE (SWITZERLAND)**
ISSN	2227-9032
DOI	https://doi.org/10.3390/healthcare12222265
Título del Artículo	Validation of the Mental Illness: Clinicians' Attitudes Scale: The Factor Structure and Psychometric Properties of the Brazilian Version

Autores e instituciones de adscripción	Raquel Helena Hernandez Fernandes [1]; Marcos Sanches [2]; Sireesha Jennifer Bobbili [2]; Simone de Godoy [1]; Álvaro Francisco Lopes de Sousa [3]; Pedro González Angulo [4]; Kelly Graziani Giacchero Vedana [1]; Carla Aparecida Arena Ventura [1] [1] PAHO/WHO Collaborating Centre for Nursing Research Development-Brazil, University of São Paulo at Ribeirão Preto College of Nursing, Ribeirão Preto 14040-902, São Paulo, Brazil [2] Centre for Addiction & Mental Health, Toronto, ON M6J 1H4, Canada [3] Instituto de Ensino e Pesquisa, Hospital Sírio-Libanês, São Paulo 01308-060, São Paulo, Brazil [4] División Académica Multidisciplinaria de Jalpa Méndez, Universidad Juárez Autónoma de Tabasco, Jalpa de Méndez 86040, Tabasco, Mexico
Resumen	**Background/Objectives:** In the literature, few instruments have been identified to measure the stigma of health professionals toward people with mental illness. In Brazil, until 2021, the literature did not indicate the validation of an instrument or the construction of an instrument for this purpose. Considering this gap, this study aimed to validate and estimate the reliability of the Mental Illness: Clinicians' Attitudes Scale, version 4 (MICA-4) for the Brazilian context, examining the psychometric properties through the analysis of its internal consistency and factor structure. **Methods:** Psychometric testing was completed in a sample of health professionals from Primary HealthCare Units. Reliability analysis was conducted in SPSS v23. Cronbach's Alpha and item total correlation were used. The dimensionality of the MICA was explored using exploratory factor analysis (EFA) in Mplus 8.2. **Results:** A total of 195 health professionals participated in the research. Cronbach's Alpha was 0.68 and according to the reliability analysis, items 10 and 12 of the original version were deleted, resulting, therefore, in 14 items. In addition, we demonstrated that it is possible to have only two factors instead of five factors, which is the number of factors in the original version of the MICA-4. **Conclusions:** This validated instrument for the Brazilian context can serve as an important tool in understanding the phenomenon of the stigma of health professionals toward people with mental illness and, consequently, in promoting anti-stigma strategies in Brazil.
Palabras claves	Instrument validation; MICA-4; health professionals

Revista	**CHEMOSPHERE**
ISSN	1879-1298
DOI	https://doi.org/10.1016/j.chemosphere.2024.143577
Título del Artículo	Efficiency of $CaZn_2(OH)_6 \cdot 2H_2O$ and ZnO nanoparticles in photocatalytic degradation of amoxicillin after multiple cycles
Autores e instituciones de adscripción	Stephania Lázaro Mass [1]; Patricia Quintana [1]; Sergio Gómez Cornelio [2,3]; Gloria Hernández Bolio [1]; Luis Herrera Candelario [4]; Rosendo López González [b]; Antonio F Fuentes [5]; Susana de la Rosa García [4]; Miguel Ruiz Gómez [6] [1] Laboratorio Nacional de Nano y Biomateriales. Centro de Investigación y de Estudios Avanzados, Unidad Mérida, Mérida, Mexico. [2] Laboratorio de Nanotecnología, División Académica de Ingeniería y Arquitectura, Universidad Juárez Autónoma de Tabasco, Carr. Cunduacán, Jalpa de Méndez, Cunduacán, Mexico; Laboratorio de Biotecnología, Universidad Politécnica del Centro, Carretera Federal, Villahermosa, Mexico. [3] Laboratorio de Biotecnología, Universidad Politécnica del Centro, Carretera Federal, Villahermosa, Mexico. [4] Laboratorio de Microbiología Aplicada, División Académica de Ciencias Biológicas, Universidad Juárez Autónoma de Tabasco, Villahermosa, Mexico [5] Centro de Investigación y de Estudios Avanzados, Unidad Saltillo, Ramos Arizpe, Mexico. [6] División de Ciencias Ambientales, Instituto Potosino de Investigación Científica y Tecnológica, Camino a la Presa San José 2055, Lomas 4a Sección, C.P. 78216, San Luis Potosí, Mexico.
Resumen	The widespread use of antibiotics has increased their presence in wastewater, largely due to inadequate removal by conventional treatment methods. This highlights a critical need for effective degradation strategies to mitigate environmental and public health risks. This study reports the photocatalytic degradation of amoxicillin (AMX) using calcium zinc hydroxide dihydrate [$CaZn_2(OH)_6 \cdot 2H_2O$] (CZ) and zinc oxide (ZnO) nanoparticles (NPs) synthesized by different routes. X-ray diffraction results confirmed the formation of CZ NPs with an 81-95% crystalline phase, while ZnO NPs present a single crystalline phase. The photolysis of AMX under UV-A light (365 nm) was strongly pH-dependent, with degradation rates of 34.7, 5.7, and 4.2% observed at pH 3, 5, and 13, respectively. Maximum adsorption occurred at pH 3, with ZnO achieving 63-83.2% AMX removal and 23.5-47.1% in the case of CZ. The highest overall AMX removal was observed at pH 3, where adsorption dominated the photocatalytic process for both CZ and ZnO. At pH 5 and 13, degradation was primarily

Resumen	driven by photocatalysis in CZ materials, particularly CZ-HT and CZ-SG, while adsorption remained predominant in ZnO. Proton nuclear magnetic resonance analysis indicates benzene ring cleavage in AMX photodegraded by CZ materials. Furthermore, the residues of photodegraded AMX by CZ materials lost antimicrobial activity against Gram-positive and Gram-negative bacteria. Additionally, the reuse of NPs over four cycles maintained consistent degradation performance, highlighting their potential for repeated applications. The comparative analysis of CZ and ZnO NPs superior photocatalytic efficiency of CZ in degrading AMX. This efficiency, along with its potential for repeated use, establish CZ as a promising material for environmental applications aimed at reducing antibiotic contamination and the associated risks of resistance development.
Palabras claves	Amoxicillin degradation; Calcium zinc hydroxide dihydrate; Photocatalysis; Zinc oxide nanoparticles.

Revista	**DIGEST JOURNAL OF NANOMATERIALS AND BIOSTRUCTURES**
ISSN	1842-3582
DOI	https://doi.org/10.15251/DJNB.2024.194.1665
Título del Artículo	ZnO/CuO heterojunction prepared by sol-gel: characterization and photocatalytic evaluation
Autores e instituciones de adscripción	J. M. Rodríguez Valencia [1]; E. Ramírez Morales [1]; M. G. Hernández Cruz [1]; F. Servín de Dios [2]; L. Rojas Blanco [1] [1] Autonomous Juarez University of Tabasco, University Avenue S/N, Magisterial Neighborhood, Villahermosa, Tabasco. ZC. 86040 Mexico. [2] Academic Area of Earth Sciences and Materials, Institute of Basic Sciences and Engineering, Autonomous University of the State of Hidalgo, Pachuca-Tulancingo Highway km. 4.5, Mineral de la Reforma 42184, Hidalgo, Mexico
Resumen	ZnO, CuO and the ZnO/CuO heterojunction were prepared using zinc acetate and copper acetate by sol-gel method. The materials were characterized by: TGA, XRD, XPS, SEM, TEM, EDS and UV-Vis. The heterostructure showed a synergistic effect compared to pure materials. The XPS results confirm the existence of a heterostructure. The morphology is a combination of characteristic morphologies of ZnO and CuO. The bandgap of ZnO decreases with the incorporation of CuO. The photocatalytic efficiency of the heterostructure increases; the degradation percentages were better for the heterostructures in both radiations: Ultraviolet and Visible.
Palabras claves	Zinc oxide, Copper oxide, Semiconductor, Photocatalysis, Organic dyes

Revista	**METHODS AND PROTOCOLS**
ISSN	2409-9279
DOI	https://doi.org/10.3390/mps7050080
Título del Artículo	Effects of Sucralose Supplementation on Glycemic Response, Appetite, and Gut Microbiota in Subjects with Overweight or Obesity: A Randomized Crossover Study Protocol
Autores e instituciones de adscripción	Zeniff Reyes López [1]; Viridiana Olvera Hernández [1]; Meztli Ramos García [1]; José D. Méndez [2]; Crystell G. Guzmán Priego [1]; Miriam C. Martínez López [1]; Carlos García Vázquez [1]; Carina S. Álvarez Villagómez [3]; Isela E. Juárez Rojop [1]; Juan C. Díaz Zagoya [4]; Jorge L. Ble Castillo [1] [1] Centro de Investigación, División Académica de Ciencias de la Salud (DACS), Universidad Juárez Autónoma de Tabasco (UJAT), Villahermosa 86150, Mexico [2] Hospital de Cardiología, Centro Médico Nacional Siglo XXI, Instituto Mexicano del Seguro Social (IMSS), Ciudad de México 06703, Mexico [3] División Académica de Ciencias Biológicas (DACBIOL), Universidad Juárez Autónoma de Tabasco (UJAT), Villahermosa 86150, Mexico [4] División de Investigación, Departamento de Bioquímica, Facultad de Medicina, Universidad Nacional Autónoma de México (UNAM), Ciudad de México 04510, Mexico
Resumen	Sucralose stands as the most common non-nutritive sweetener; however, its metabolic effects have sparked significant controversy over the years. We aim to examine the effects of sucralose daily intake on glycemia, subjective appetite, and gut microbiota (GM) changes in subjects with overweight or obesity. In this randomized, crossover, and controlled trial, 23 participants with a body mass index between 25 kg/m^2 and 39.9 kg/m^2 will be assigned to

Resumen	one of two interventions to receive either sucralose (2 mg/kg/day equivalent to 40% of the acceptable daily intake) or glucose (control) for 4 weeks, each phase separated by a 4-week washout period. The glycemic response will be determined during a meal tolerance test, subjective appetite will be evaluated using a visual analog scale, and GM changes will be analyzed by next-generation sequencing of the bacterial rRNA 16S gene from fecal samples. All measures will be performed before and after intervention periods. We hypothesize that sucralose supplementation induces changes in glycemic response, subjective appetite, and gut microbiota in overweight and obese participants. This protocol was approved by the Ethics Committee of the UJAT (No. 0721) and was registered in the Australian New Zealand Clinical Trials Registry (ACTRN12621001531808).
Palabras claves	Sucralose; non-nutritive sweeteners; glycemic response; appetite; gut microbiota; crossover study; obesity

Revista	**REVISTA COLOMBIANA DE CIENCIAS PECUARIAS**
ISSN	2256-2958
DOI	10.17533/udea.rccp.v38n1a3
URL	https://goo.su/zt5PB
Título del Artículo	Relationship between body weight and dorsal area in female buffaloes
Autores e instituciones de adscripción	Armando Gómez Vázquez [1]; Alvar Alonzo Cruz Tamayo [2]; Enrique Camacho Pérez [3]; Antonio Leandro Chaves Gurgel [4]; José Herrera Camacho [5]; Daniel Mota Rojas [6]; Ricardo A. García Herrera [1]; Luís Carlos Vinhas Ítavo [7]; Tairon Pannunzio Dias Silva [4]; Alfonso Juventino Chay Canul [1] [1] División Académica de Ciencias Agropecuarias. Universidad Juárez Autónoma de Tabasco: Villahermosa, Tabasco, México. [2] Facultad de Ciencias Agropecuarias. Universidad Autónoma de Campeche: Escárcega, Campeche, México. [3] Facultad de Ingeniería. Universidad Autónoma de Yucatán: Mérida, Yucatán, México. [4] Campus Professora Cinobelina Elvas. Universidade Federal do Piauí: Bom Jesus, Piauí, Brasil. [5] Instituto de Investigaciones Agropecuarias y Forestales: Universidad Michoacana de San Nicolás de Hidalgo, Tarímbaro, Michoacán, México. [6] Department of Animal Production and Agriculture.Universidad Autónoma Metropolitana: México City, México. [7] Faculdade de Medicina Veterinária e Zootecnia, Universidade Federal de Mato Grosso do Sul, Campo Grande, Mato Grosso do Sul, Brasil.
Resumen	**Background:** Body weight (BW) has been reported as important information in the decision-making process; therefore, it is necessary to determine if body measurements obtained from the dorsal view of the animal are related to BW, considering that we are currently living in the era of the so-called "livestock 4.0". **Objective:** The objective of the present study was to evaluate the relationship between BW and dorsal area (DA) in water buffaloes (*Bubalus bubalis*) reared in southeastern Mexico. **Methods:** The BW (340 ± 161.68 kg), hip width (BW), thorax width (TW) and body length (BL) were measured in 215 female Murrah buffaloes aged between 3 months and 5 years. The DA (m2) was calculated using the mathematical formulae for calculating the area of a trapezoid, considering the HW, TW, and BL in the calculation. The relationship between BW and DA was assessed using correlation and regression models. **Results:** The correlation coefficient between BW and AD was 0.96 (P<0.001). The linear 30 equation demonstrates the highest determination coefficient value (R2 = 0.94) along with the 31 lowest mean square error (MSE = 1716.86), root MSE (RMSE = 41.43), Akaike Information Criterion (AIC = 1603.36), and Bayesian Information Criterion (BIC = 1610.10). Conversely, the allometric equation exhibits the highest values of MSE, RMSE, AIC, and BIC. The quality of fit using the k-folds technique allowed us to identify that the three proposed equations showed consistent adjustments, with an accuracy above 90% (R2 = 0.92). Among them, the quadratic equation exhibited lower values of mean squared prediction error and mean absolute error. **Conclusions:** The DA can be a good predictor of BW in buffaloes, especially when incorporated into first and second-degree linear equations.
Palabras claves	Animal growth; biometric measurements; *Bubalus bubalis*; humid tropics; live weight; mathematical models; weight prediction.

Revista	**EUROPEAN PUBLIC AND SOCIAL INNOVATION REVIEW**
ISSN	2529-9824
DOI	https://doi.org/10.31637/epsir-2024-738
Título del Artículo	Perception of artificial intelligence by university students as a companion in the learning process
Autores e instituciones de adscripción	Mena de la Rosa, Rafael [1]; Cruz Romero, Rubicel [1]; Silva Payró, Martha Patricia [1] [1] Universidad Juárez Autónoma de Tabasco
Resumen	**Introducción:** El área de las Tecnologías de la Información identificada como Inteligencia Artificial (IA), ha tomado un rol importante, pues presenta la posibilidad de que los estudiantes sean asistidos por entes informáticos que tienen la capacidad de tomar decisiones de acuerdo con la información con que fueron alimentados. **Metodología:** Se realizó este estudio con enfoque mixto y descriptivo, no experimental y transversal en una escuela de Tecnologías de la Información (TI), de una universidad pública del estado de Tabasco en México, con un universo muestral de 151, a través de seis ítems, considerando dentro de la muestra estudiantes de licenciatura y posgrado; con el objetivo de conocer cómo perciben la intervención de la IA en el aprendizaje. **Resultados:** Se encontraron diversas consideraciones que indican el alto nivel de interés de utilizar como apoyo del aprendizaje las herramientas de IA; también se halló interés en la privacidad, el plagio, errores en los contenidos, entre otros aspectos. **Discusión:** El estudio es una exploración localizada y con resultados particulares, que pueden ampliarse a través de nuevas investigaciones. **Conclusiones:** Existe un camino por recorrer por los desarrolladores de IA y las empresas que ofrecen las herramientas, para atender las preocupaciones de los estudiantes.
Palabras claves	Aprendizaje; Inteligencia Artificial; Conocimiento; Cuarta Revolución Industrial; Estudiante

Revista	**EUROPEAN PUBLIC AND SOCIAL INNOVATION REVIEW**
ISSN	2529-9824
DOI	https://doi.org/10.31637/epsir-2024-901
Título del Artículo	Habilidades sociales y autoeficacia: interés por elección de carreras en ciencias, tecnología, ingeniería y matemáticas
Autores e instituciones de adscripción	Vázquez Reyes, Estrella [1]; Aguilar Morales, Norma [1]; Magaña Medina, Deneb Elí [1] [1] Universidad Juárez Autónoma de Tabasco
Resumen	**Introducción:** En un contexto social de constantes cambios mediado por avances tecnológicos y la IA, se agudiza la demanda de personal especializado en ciencias, tecnologías, ingeniería y matemáticas (CTIM), sin embargo, la escasez de recursos humanos en estas áreas es alto, por lo que el propósito de este estudio es explicar las relaciones existentes entre las variables de estudio. **Metodología:** Este estudio fue realizado bajo el enfoque cuantitativo, con un diseño no experimental transversal de tipo explicativo, la muestra estuvo compuesta por 904 estudiantes (DT= 0,67); 462 eran mujeres (M=17,35 años; DT=0,66) y 442 hombres (M=17,46 años; DT= 0,68) de bachillerato pertenecientes a los pueblos originarios del sur de México. **Resultados:** El modelo estructural indica que existe relación entre las variables, que la autoeficacia influye directa y positiva en el interés por carreras CTIM. **Discusión:** Existen múltiples estudios que buscan explicar los factores que predominan en el desarrollo del interés en carreras CTIM, además esta investigación contribuye a la validación de los postulados propuestos en la teoría social cognitiva de la carrera. **Conclusiones:** Se sugiere replicar este estudio en contextos similares en las que se incluya al género como un factor moderador del interés por elección de carreras CTIM.
Palabras claves	Autoeficacia, Habilidades de comunicación, habilidades de interacción, interés, ciencia, tecnología, ingeniería, matemáticas

Revista	**CHILEAN JOURNAL OF AGRICULTURAL AND ANIMAL SCIENCES**
ISSN	0719-3890
DOI	http://dx.doi.org/10.29393/chjaas40-54ppfa70054_

Título del Artículo	Productive Performance in Pigs Supplemented with Increasing Levels of Organic Selenium
Autores e instituciones de adscripción	Fabian Valera Lara [1]; Michelle Estrada Gijón [1]; José Sanginés García [1]; Adelfo Vite Aranda [2]; Alfonso Chay Canul [3]; Einar Vargas Bello Pérez [4]; Ángel Piñeiro Vázquez [1] [1] Tecnológico Nacional de México/ Instituto Tecnológico de Conkal, C.P. 97345, Yucatán, Mexico [2] Grupo Biotecap SA de CV, Dirección: Av. La Puerta 249. Fracc. Industrial La Puerta. C.P. 47600, Tepatitlán, Jalisco, Mexico [3] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco. Carr. Villahermosa-Teapa, km 25, C.P 86280, Villahermosa, Tabasco, Mexico [4] Facultad de Zoología y Ecología/ Universidad Autónoma de Chihuahua, C.P. 31031, Chihuahua, Mexico
Resumen	The objective of this study was to determine the productive performance of pigs, during the starter (from 11 to 25 kg of live weight) and grower (from 25 to 50 kg of live weight) stages, supplemented with increasing levels of dietary organic selenium under tropical conditions. Pigs (n=71) were distributed in randomized block design with four treatments (0, 0.3, 0.6, and 0.9 mg kg-1 of feed). Organic selenium was included in the diet as selenomethionine (SeMet) from the BIOWAYS® product with a concentration of 2,000 ppm. The study was conducted over a 70-day period. The variables evaluated were voluntary feed intake, daily weight gain, and feed conversion. The daily weight gain varied between treatments in the starter stage, with average values of 0.431, 0.510, 0.466, and 0.554 g day-1 ($P<0.05$), but similar values of 0.890, 0.809, 0.908 and 0.884 kg day-1 were obtained in the grower stage for treatments with 0, 0.3, 0.6 and 0.9 mg kg-1 of feed, respectively. Feed conversion in the starter and grower stages improved when pigs were supplemented with selenium ($P<0.05$). Overall, supplementation with organic selenium improves daily weight gain and feed conversion in pigs during the starter and grower stages.
Palabras claves	Animal welfare; weight gain; efficiency; tropics

Revista	**CHILEAN JOURNAL OF AGRICULTURAL AND ANIMAL SCIENCES**
ISSN	0719-3882
DOI	http://dx.doi.org/10.29393/chjaas40-51epaa110051
Título del Artículo	Effect of *Pouteria sapota* kernel meal on *in vitro* ruminal fermentation, nutrient degradability, and protozoa population
Autores e instituciones de adscripción	Adriana Sánchez Zárate [1]; Alfonso Juventino Chay Canul [2]; Edgar Aguilar Urquizo [1]; Jorge Canul Solís [1]; Germán Giácoman Vallejos [3]; Avel González Sánchez [3]; Emanuel Hernández Núñez [4]; Alfonso Pérez Gutiérrez [1]; San German Bautista Parra [1]; Einar Vargas Bello Pérez [5]; Ángel Trinidad Piñeiro Vázquez [1]; [1] Tecnológico Nacional de México, Campus Conkal, Yucatán, Mexico. [2] Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias Agropecuarias, Tabasco, Mexico. [3] Facultad de Ingeniería. Universidad Autónoma de Yucatán. Industrias no Contaminantes S / N por Periférico Norte. CP. 97310, Mérida, Yucatán, Mexico. [4] Departamento de posgrado e investigación, Instituto Tecnologico de Calkiní. Av. Ah Canul S/N por carretera federal, 24930. Calkiní, Campeche, México. [5] Facultad de Zootecnia y Ecología, Universidad Autónoma de Chihuahua, Periférico R. Aldama Km 1, 31031 Chihuahua, Mexico
Resumen	This study determined the effect of different levels of mamey kernel meal (MKM) as a substitute for ground corn and soybean meal on *in vitro* gas production, nutrient degradability, fermentation, and protozoan population. The study was carried out in a randomized block design repeated over time. The treatments consisted of seven levels of mamey kernel meal, namely 0, 5, 10, 15, 20, 25, and 30% dry matter (DM), replacing ground corn and soybean meal. The inclusion of MKM had a linear effect on *in vitro* gas production ($P=0.03$); the highest production was at 30% inclusion and the lowest at 0%, with 381 and 291 mL g^{-1}, respectively. No differences ($P>0.05$) were found in gas production, fermentation rate, and lag time between treatments. The maximum volume of gas production (397.43 mL g^{-1}) was at 30%, while the lowest (291.40 mL g^{-1}) was observed at 0% inclusion of MKM. No differences were found in nutrient degradability, protozoan population, and volatile fatty acids ($P>0.05$). The genera of protozoa that were identified were Entodinium and Holotrich. The different inclusion levels of MKM did not affect the total protozoa population ($P>0.05$). In conclusion, MKM can be included up to 15% under *in vitro* conditions without negative effects on fermentative parameters. However, further *in vivo* studies are needed.
Palabras claves	Byproduct; *Pouteria sapota*; gas production; seed meal; oleic acid

Revista	**CHILEAN JOURNAL OF AGRICULTURAL AND ANIMAL SCIENCES**
ISSN	0719-3890
DOI	http://dx.doi.org/10.29393/chjaas40-52fuda60052
Título del Artículo	Feed Utilization Efficiency and Nitrogen Balance in Dual Purpose Cows Fed Local Diets in The Subhumid Tropic of Mexico
Autores e instituciones de adscripción	Dixan Pozo Leyva [1]; Fernando Casanova Lugo [1]; Felipe López González [2]; Alvar A. Cruz Tamayo [3]; Ricardo L. D. Costa [4]; Alfonso J. Chay Canul [5] [1] Tecnológico Nacional de México/I.T. de la Zona Maya. Carretera Chetumal-Escárcega km 21.5, Ejido Juan Sarabia, 77960, Othón P. Blanco, Quintana Roo, Mexico [2] Instituto de Ciencias Agropecuarias y Rurales (ICAR), Universidad Autónoma del Estado de México, Campus UAEM El Cerrillo, El Cerrillo Piedras Blancas, 50090 Toluca, Estado de México, Mexico [3] Facultad de Ciencias Agropecuarias, Universidad Autónoma de Campeche. Escárcega, Campeche. C.P. 24350, Mexico [4] Instituto de Zootecnia. Rua Heitor Penteado, 56, Centro, CEP 13380-011, Nova Odessa, Sao Paulo, Brazil [5] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco. Carretera Villahermosa-Teapa, km 25, R/a. La Huasteca 2a. Sección, C.P. 86280. Villahermosa, Mexico
Resumen	The objective of the study was to evaluate the effect of different levels of maize silage on feed utilization efficiency and nitrogen (N) balance in dual-purpose cows during the dry season. Nine crossbred cows with live weight of 423±12 kg were used. The treatments were: T1= 2 kg DM of maize silage + 3.9 kg DM of sorghum stubble; T2= 4 kg DM of maize silage + 1.8 kg DM of sorghum stubble; T3= 6 kg DM of maize silage. Additionally, all cows consumed *Panicum maximum* cv. Mombasa grass, supplemented with poultry manure and commercial concentrate in doses of 2.0, 2.9 and 2.3 kg DM, respectively. Data comparison was performed by ANOVA, and the experiment was conducted using a completely randomised mathematical model with three replicates. No significant differences (p >0.05) were observed for any of the variables evaluated. N intake reached 279.8 g day^{-1} of which 8.5% was excreted in milk, 42.1% in faeces and 41.2% in urine. Milk production was 4.4 kg cow^{-1} day^{-1}, with 33.1 g kg^{-1} fat and 34.4 g kg^{-1} crude protein (CP). N balance was 27.5 g cow^{-1} day^{-1}, while utilization efficiency reached 8.6%. A higher inclusion of maize silage increased CP and N contents of the diet supplied to the cows, but it did not result in higher milk production. Feed utilization efficiency was limited even in the treatment with the lowest N content in the ration (T1). Further research is required to evaluate the economic and productive viability of the dietary inclusion of different silages, as a feeding strategy to cope with the low availability of forages during dry periods in low-scale milk production systems.
Palabras claves	Maize silage; dry season; family livestock; milk production; supplementation

Revista	**ACTA SCIENTIAE VETERINARIAE**
ISSN	1679-9216
DOI	https://doi.org/10.22456/1679-9216.138187
Título del Artículo	Haematological Status of Cows in Different Physiological Stages under Humid Tropic Conditions
Autores e instituciones de adscripción	Oswaldo Margarito Torres Chablé [1]; Nadia Florencia Ojeda Robertos [2]; Paulo Sergio Zamudio Ortiz [2]Alfonso Juventino Chay Canul [2]; José Candelario Segura Correa [3]; Víctor Hugo Severino Lendechy [4]; Jorge Alonso Peralta Torres [2] [1] Laboratorio de Enfermedades Tropicales y Transmitidas por Vectores & [2] División Académica de Ciencias Agropecuarias, Universidad Juárez Autónoma de Tabasco (UJAT), Villahermosa, Tabasco, México. [3] Campus de Ciencias Biológicas y Agropecuarias. Universidad Autónoma de Yucatán (UADY), Mérida, Yucatán, México. [4] Centro de Estudios Etnoagropecuarios, Universidad Autónoma de Chiapas (UACH), San Cristóbal de las Casas, Chiapas, México.
Resumen	**Background:** Baseline haematological data serve as reference for the evaluation of the health status of animals. In cows, physiological stages such as pregnant, calving and lactation represent challenges, which can affect their blood parameters. The prepartum and postpartum periods are important for the productive and reproductive efficiency of cows. There is a transition period involving several physiological adaptations in a short period of time that can lead to health problems, especially metabolic and infectious diseases.

Resumen	The aims of the present study were report haematological reference intervals and identify haematological changes in Gyr x Holstein cows from the humid tropics of Mexico during their prepartum, calving and postpartum stages. **Materials, Methods & Results:** Body weight, body condition and blood samples of 33 Gyr × Holstein cows were obtained every 30 days as follows: 60 and 30 days prepartum; calving day (0 day); and 30, 60 and 90 days postpartum. Cows were handled according to the production system and conditions established by owners. Feeding was based on intensive rotational grazing on the natural grass Paspalum fasciculatum, and 3 kg animal/day of commercial feed (16% CP), mineral salt and water *ad libitum*. Haematological variables were measured using an automated analyzer. The haematological reference intervals were obtained using the Reference Value Advisor V21 integrated into Microsoft Excel 2016. This facilitated the calculation of confidence intervals by evaluating the data dispersion and homogeneity. When data were considered with "No Gaussian" distribution, the reference interval and confidence intervals were obtained from the robust method with a Box-Cox transformation of the data. Confidence intervals of the haematological variables were calculated at 90% Variables with Gaussian distribution or transformed were evaluated in one-way analyses of variance using the statistical software IBM SPSS version 22, applying the Tukey test when significant differences were detected ($P < 0.05$). Additionally, Pearson correlation coefficients were estimated between variables. The body condition and body weight of pregnant cows were higher than after calving ($P < 0.05$), and these variables were positively correlated ($r = 0.4$, $P = 0.01$). However, the haematological variables were not associated with the productive variables. The erythrograms of the different physiological stages showed significant differences ($P < 0.05$) in the packed cell volume (PCV) and mean corpuscular haemoglobin concentration (MCHC) values, whereas the red blood cell (RBC), haemoglobin (HGB) and platelet (PLT) counts; mean corpuscular volume (MCV); and mean corpuscular haemoglobin (MCH) did not present differences among groups. The leukograms showed increases in band neutrophils and monocytes during the calving period ($P < 0.05$). **Discussion:** Cows showed a decrease in body condition and live weight after calving. This is attributable to the weight loss following the expulsion of calf as well as liquid and foetal membranes. After this point, cows did not present changes in live weight between 60 and 90 days postpartum. The RBC during all physiological stages was similar with the reported in dairy cows from central area of Mexico and Holstein cows raised in Canada. The RBC and PCV presented a gradual numeric decrease during the prepartum to postpartum periods, causing the increase in MCHC at 30, 60 and 90 days postpartum. Physiologically, it is understood that even when the number of erythrocytes decreases, their function is compensated by increasing their amount of hemoglobin. The leukograms showed statistical differences by increasing the band neutrophils and monocytes after calving, which can be associated with calving and the migration of neutrophils to the uterine lumen and mammary glands. The haematological values reported herein can help to establish baseline values that would enable the detection of abnormalities in prepartum and postpartum Gyr x Holstein cows in the humid tropic of Mexico.
Palabras claves	Blood values, erythrogram, leukogram, reference data

Revista	**COMPUTACION Y SISTEMAS**
ISSN	2007-9737
DOI	https://doi.org/10.13053/cys-28-4-5300
Título del Artículo	Branching and Pruning Algorithm for Computing the Merrifield-Simmons Index on Polygonal Grids
Autores e instituciones de adscripción	Herlinda González Vázquez [1]; Cristina López Ramírez [1]; Pedro Bello López [2]; Guillermo de Ita Luna [2] [1] Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias y Tecnologías de la Información, Villahermosa, Mexico. [2] Benemérita Universidad Autónoma de Puebla, Facultad de Ciencias de la Computación, Puebla, Mexico.
Resumen	In this paper, we present the molecular structure of benzene as a regular hexagonal ring and an isomorphic hexagonal lattice, a molecular structure introduced by Merrifield-Simmons (MS) in 1989. The MS index, a topological index used in mathematical chemistry, is the number of independent sets of a graph G. This index plays a crucial role in our understanding of complex molecular structures. The strategy to compute the MS index involves the construction of a Hamiltonian trajectory in the input graph. These structures are discussed

Resumen	in fields such as theoretical and computational chemistry. Therefore, we propose a novel branch and bound method for counting independent sets on polygonal benzenoid meshes, highlighting its importance in the study of the analysis of complex molecular structures and its applicability in interdisciplinary scientific fields.
Palabras claves	Benzenoid; independent sets; Hamiltonian path

Revista	**SCIENTIA PHARMACEUTICA**
ISSN	eISSN: 2218-0532
DOI	https://doi.org/10.3390/scipharm92040054
Título del Artículo	Position Matters: Effect of Nitro Group in Chalcones on Biological Activities and Correlation via Molecular Docking
Autores e instituciones de adscripción	Alam Yair Hidalgo [1,2]; Nancy Romero Ceronio [1]; Carlos Ernesto Lobato García [1]; Maribel Herrera Ruiz [3]; Romario Vázquez Cancino [1]; Omar Aristeo Peña Morán [4]; Miguel Ángel Vilchis Reyes [1]; Ammy Joana Gallegos García [5]; Eric Jaziel Medrano Sánchez [1]; Oswaldo Hernández Abreu [1]; Abraham Gómez Rivera [1] [1] División Académica de Ciencias Básicas, Universidad Juárez Autónoma de Tabasco, Carretera Cunduacán-Jalpa Km 1, Col. La Esperanza, Cunduacán 86690, Tabasco, Mexico [2] Tecnológico Nacional de México-Instituto Tecnológico Superior de Comalcalco, Carretera Vecinal, Comalcalco-Paraiso Km 2, R/a Occidente 3ra Sección, Comalcalco 86650, Tabasco, Mexico [3] Centro de Investigación Biomédica del Sur, Instituto Mexicano del Seguro Social, Calle Rep. Argentina #1, Xochitepec 62780, Morelos, Mexico [4] División de Ciencias de la Salud, Universidad de Quintana Roo, Av. Erick Paolo Martínez S/N, Esquina Av. 4 de Marzo, Chetumal C.P. 77039, Quintana Roo, Mexico [5] División de Ciencias Básicas e Ingeniería, Universidad Popular de la Chontalpa-Carretera Cárdenas-Huimanguillo Km 2 S/N, Ranchería, Invitab Paso y Playa, Heroica Cárdenas 86556, Tabasco, Mexico
Resumen	A series of nine nitro group-containing chalcones were synthesized to investigate their anti-inflammatory and vasorelaxant activities via *in vivo*, ex vivo, and in silico studies. The anti-inflammatory effects of the compounds were evaluated via a TPA-induced mouse ear edema model, and the vasorelaxant effects were evaluated via an isolated organ model in addition to molecular docking studies. The compounds with the highest anti-inflammatory activity were **2** (71.17 ± 1.66%), **5** (80.77 ± 2.82%), and **9** (61.08 ± 2.06%), where the nitro group is located at the ortho position in both rings, as confirmed by molecular docking with COX-1 and COX-2. The compounds with the highest vasorelaxant activity were **1** (81.16 ± 7.55%), lacking a nitro group, and **7** (81.94 ± 2.50%), where the nitro group is in the para position of the B ring; both of these compounds interact with the eNOS enzyme during molecular docking. These results indicate that the position of the nitro group in the chalcone plays an important role in these anti-inflammatory and vasorelaxant activities.
Palabras claves	Chalcones; nitro group; anti-inflammatory activity; vasorelaxant activity; docking

Revista	**DYNAMICS OF CONTINUOUS, DISCRETE AND IMPULSIVE SYSTEMS SERIES B: APPLICATIONS AND ALGORITHMS**
ISSN	1492-8760
URL	https://eurekamag.com/research/093/510/093510307.php?srsltid=AfmBOooCm4EnTXTAgtwK-BRUZqwQAlZdLkibc9eW2VIYlcmarGGIX_uW
Título del Artículo	Transcritical Bifurcation in a Squirrel-Cage Rotor Induction Motor with Friction
Autores e instituciones de adscripción	L. E. Ángeles [1]; V. Castellanos [2] [1] Academic Division of Basic Sciences [2] University Juarez Autonomous of Tabasco, Cunduacn, Tabasco, Mexico
Resumen	The induction motors are principally used in the industry due to their simple and robust construction. To improve speed control it is necessary to know the dynamic behavior of the motor. A mathematical model was proposed that includes air gap friction and friction on the bearings. The proposed model is de ned by using a stationary reference frame and the study, presents the necessary conditions on the parameter to guarantee the existence of two

Resumen	equilibrium points and their stability. The behavior of the equilibrium points switches by the variations of the bifurcation parameter. The transcritical bifurcation occurs when the friction on the bearings is zero, and air gap friction is a positive number diferent from zero. A way to have zero friction on the bearings is using magnetic bearings that reduce the loose mechanic and improve the accuracy.
Palabras claves	Transcritical bifurcation, magnetic bearing, squirrel-cage rotor, induction motor, bearing friction, air gap friction.

Revista	**TROPICAL AND SUBTROPICAL AGROECOSYSTEMS**
ISSN	1870-0462
DOI	http://doi.org/10.56369/tsaes.5646
Título del Artículo	The Schaffer Formula Can't Predict Liveweight in Back Belly Sheep
Autores e instituciones de adscripción	Pedro Colorado García [1]; José Luis Ponce Covarrubias [2]; Roberto Carlos Barrientos Medina [3]; Claudia Virginia Zaragoza Vera [1]; Maritza Zaragoza Vera [1]; Oswaldo Torres Chablé [1]; Alfonso Juventino Chay Canul [1] [1]Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias Agropecuarias, Carretera Villahermosa-Teapa, km 25, Ranchería La Huasteca 2ª Sección, Centro, Tabasco, México. C.P. 86280. Villahermosa, Tabasco, México. [2]Escuela Superior de Medicina Veterinaria y Zootecnia No. 3, Universidad Autónoma de Guerrero (UAGro), Técpan de Galeana, Guerrero, México. [3]Facultad de Medicina Veterinaria y Zootecnia, Campus de Ciencias Biológicas y Agropecuarias, Universidad Autónoma de Yucatán, km 15.5 carretera Mérida-Xmatkuil, Mérida, Yucatán, México. C. P. 97135.
Resumen	**Background.** Schaeffer's formula has been promoted as an alternative to animal weighting in recent years. However, no studies evaluating the Schaeffer formula in the Black Belly hair sheep breed have been developed. **Objective.** To evaluate Schaeffer's formula for predicting body weight in male and female Black Belly sheep reared under tropical conditions. **Methodology.** Body weight (BW, kg), thoracic circumference (TC, cm) and body length (BL, cm) were recorded in 120 Black Belly lambs (60 females and 60 males). The lambs were clinically healthy and aged between 6 and 8 months. Schaeffer's formula for calculating BW was BW (kg) = $(BL \times TC^2)/10838$. First, the distributions of the values were examined by means of a histogram showing both sets of values simultaneously. The medians of each set were then obtained and statistically compared using the Wilcoxon signed-rank test to test the null hypothesis of no difference between the two sets of measurements considered. **Results.** In the present study it was observed that Shaeffer's formula underestimated BW in Black Belly sheep ($P<0.05$) at about 5.84 kg. This weight represents about 20.40% of the observed mean BW. The underestimation was also much greater than expected in males at approximately 6.88 kg, this weight represents approximately 22.40% of the observed mean BW in males. However, for females the difference was 4.09 kg. This weight represents approximately 15.40% of the observed mean BW for females. **Implications.** Caution should be exercised in using the Schaffer formula for estimating liveweight in black belly sheep, or some adjustment to this equation should be evaluated to increase its precision and accuracy for predicting liveweight in hair sheep breeds. **Conclusion.** Under the conditions in which the present study was carried out, it was concluded that Shaeffer's formula underestimated BW in Black Belly sheep. The estimated BW differed from the observed BW ($P<0.05$), and this parameter was underestimated much more than expected in males than in females, showing that this formula is not accurate in estimating BW in male and female Black Belly sheep. As a result, estimates should be treated with caution. There is a need to develop improved prediction equations for adequate estimation of BW of male and female Black Belly sheep.
Palabras claves	Hair sheep; Live weight; Animal production; Accuracy.

Revista	**REVISTA CUBANA DE SALUD PUBLICA**
ISSN	1561-3127
URL	https://revsaludpublica.sld.cu/index.php/spu/article/view/18124
Título del Artículo	The Perception in Patients, Family Members and Providers in Mexico about Quality in Diabetes Mellitus Control

Autores e instituciones de adscripción	Sergio Noriero Escalante [1]; María Isabel Ávalos García [2]; Heberto Romeo Priego Álvarez [2]; Hilda Santos Padrón [2] [1] Instituto Mexicano del Seguro Social de Tabasco. Tabasco, México. [2] Universidad Juárez Autónoma de Tabasco, División Académica de Ciencias de la Salud. Tabasco, México.
Resumen	**Introduction:** Chronic diseases such as diabetes represent one of the greatest public health challenges of this century. Its control requires the direct intervention of the patient, family, and health care provider. **Objective:** To analyze the quality in the management and control of diabetes from the opinion of patients, family members and health providers in the Medical Units of the Mexican Social Security Institute of a federal entity in southeastern Mexico. **Methods:** Research in health systems and services, qualitative, phenomenological under the interpretive approach. 165 patients participated in 16 focus groups, 160 relatives of patients in 16 focus groups, and 159 providers in ten focus groups. Interview guides were used. To process the data, the ATLAS.ti V23 software was used, carrying out the process of transcription, coding, categorization, saturation and triangulation to derive conclusions. **Results:** There are several factors that limit the quality of diabetes management, one of which is the grief that the patient experiences for refusing to accept their illness, the hegemonic nature of medical care, the organizational limitations that prevent them from dedicating quality time. to the patient and the lack of family and social support. **Conclusions:** Evaluating diabetes interventions from a people-centered quality perspective is currently a priority. Health service providers, family members, and society are substantially involved in the proper management of the disease.
Palabras claves	Qualitative research; diabetes mellitus; quality

Revista	**HEAT TRANSFER**
ISSN	0017-9310
DOI	https://doi.org/10.1002/htj.23246
Título del Artículo	Numerical Analysis of the Heat and Mass Transfer in a Ventilated Cavity for Turbulent Convective Flow with Extreme Hot and Humid Climate Conditions
Autores e instituciones de adscripción	J. Serrano Arellano [1]; F. N. Demesa López [1]; K. M. Aguilar Castro [2]; J. M. Belman Flores [3] [1] División de Estudios de Posgrado e Investigación, Tecnológico Nacional de México/IT de Pachuca, Pachuca de Soto, Hgo, México [2] División Académica de Ingeniería y Arquitectura, Universidad Juárez Autónoma de Tabasco, Cunduacán, México [3] Departamento de Ingeniería Mecánica, División de Ingenierías, Grupo de Investigación IRSE, Campus Irapuato-Salamanca, Universidad de Guanajuato, Salamanca-Valle de Santiago, México
Resumen	To analyze the temperature and relative humidity (*RH*) in a room located in the Lacandona jungle in Chiapas, Mexico, a numerical heat and mass transfer study was performed. The study was carried out in a ventilated cavity, by introducing air flow into user-occupied spaces. The study analyzed the combination of temperature and humidity percentage to create thermal comfort conditions. The finite volume method was used to solve the governing equations, while pressure–velocity coupling was done with the SIMPLEC algorithm. Turbulent airflow was considered, and modeled using the k–ε turbulence model, with Reynolds numbers (*Re*) in the range from 100 to 5000. Seven sets of weather conditions were considered for a warm April day with solar radiation values that ranged from 0 to 981 W/m², outdoor temperatures between 19.9°C and 35.3°C, as well as *RH* from 42% up to 100%. The study analyzed temperature, *RH*, distribution efficiencies, and heat fluxes. It was found that the average temperature closest to thermal comfort was 25.8°C. This corresponds to an $Re = 5000$, being the best hygrothermal conditions with an average *RH* of 50%. However, this level of *RH* is unattainable by many air conditioning systems.
Palabras claves	Heat transfer; Mass transfer; Solar radiation; Turbulence model

Revista	**IEEE ACCESS**
ISSN	2169-3536
DOI	http://dx.doi.org/10.1109/ACCESS.2024.3506979

Título del Artículo	Intuitionistic Fuzzy Multi-Criteria Hybrid Approach for Prioritizing Seasonal Respiratory Diseases Patients Within the Public Emergency Departments
Autores e instituciones de adscripción	Armando Pérez Aguilar [1,2]; Pablo Pancardo [1]; Miguel Ortiz Barrios [3,4]; Alessio Ishizaka [5] [1] Academic Division of Information Science and Technology, Juarez Autonomous University of Tabasco, Villahermosa 86040, Mexico [2] TecNM: Instituto Tecnológico Superior de Villa la Venta, Division of Computer Systems Engineering, Huimanguillo, Tabasco 86410, Mexico [3] Centro de Investigación en Gestión e Ingeniería de Producción (CIGIP), Universitat Politècnica de València, 46022 Valencia, Spain [4] Department of Productivity and Innovation, Universidad de la Costa CUC, Barranquilla 080002, Colombia [5] NEOMA Business School, 76130 Mont-Saint-Aignan, France
Resumen	When several patients with Seasonal Respiratory Diseases (SRDs) arrive at Emergency Departments (EDs) and healthcare resources are scarce, physicians need to decide which patients to hospitalize. Several conflicting criteria can be used for this decision. Moreover, medical judgments may vary significantly from one doctor to another, based on their perceptions and backgrounds. Considering the above-mentioned context, this study aimed to develop a Multi-criteria Decision-Making (MCDM) model for measuring the risk of unfavorable health evolution —Risk Priority Index (RPI) in each SRD patient and determine the best discharge/treatment option accordingly. Our model is composed of three methods: Intuitionistic Fuzzy Analytic Hierarchy Process (IF-AHP), Intuitionistic Fuzzy Decision-Making Trial and Evaluation Laboratory (IF-DEMATEL), and Combined Compromise Solution (CoCoSo). A case study of Covid-19 patients in a public Mexican hospital was presented to validate the proposed approach. This investigation has proposed a hybrid MCDM framework that is advantageous over the others proposed in the literature as it incorporates 1) uncertainty, 2) vagueness, 3) experts' hesitancy, 4) interdependence assessment, 5) short- and long-term interventions, 6) RPI and risk levels, and 7) specific intervention pathways for patients. The results demonstrated that Covid-19 symptoms (global weight = 20.9%) and comorbidities (global weight = 20.7%) were the most important factors in prioritizing infected patients within the EDs, while managing symptomatology played a key role in defining the patient pathway in the healthcare system (D+RT = 15.792).
Palabras claves	CoCoSo; Covid-19 patient; IF-AHP; IF-DEMATEL; MCDM; intuitionistic fuzzy; prioritizing; seasonal respiratory diseases

Revista	**REVISTA INFODIR**
ISSN	1996-3521
DOI	https://revinfodir.sld.cu/index.php/infodir/article/view/1536
Título del Artículo	Validation of a questionnaire to determine the applicability of marketing in professional medical practice.
Autores e instituciones de adscripción	Heberto Romeo Priego Álvarez [1]; Juan Antonio Córdova Hernández [1]; María Isabel Avalos García [1]; Luis Ángel Ramón Leyva [2]; Ada Bayit Ramírez Gapi [2] [1] División Académica de Ciencias de la Salud. Universidad Juárez Autónoma de Tabasco [2] Estudiante en verano científico. Licenciatura en Médico Cirujano. División Académica de Ciencias de la Salud. Universidad Juárez Autónoma de Tabasco. México
Resumen	This research article presents the results of the process of design, validation and reliability of an instrument to determine the degree of applicability of marketing in the professional practice of the doctor, taking into account its dimensions and uses. For this purpose, content validation was carried out with the support of ten experts using a Delphi process and the methodology proposed by Moriyama, Internal consistency was determined through the calculation of Cronbach's alpha coefficient. Participants satisfactorily evaluated most of the items. The internal consistency index of Cronbach's Alpha obtained was high (0.9265), which means that sufficient evidence was found for the instrument to be used as a useful, feasible and reliable tool.
Palabras claves	Validation study, reproducibility of results, marketing, physicians, professional practice.

Revista	**ANNALS OF MATHEMATICAL SCIENCES AND APPLICATIONS**
ISSN	2380-288X
DOI	10.4310/AMSA.2024.v9.n1.a7
URL	https://intlpress.com/JDetail/1805564270903500801
Título del Artículo	Parameter estimation and control by penalized multiple shooting
Autores e instituciones de adscripción	L. Héctor Juárez [1]; Jorge López [2]; Jessica T. Rojas [1] [1] Universidad Autónoma Metropolitana Iztapalapa, Ciudad de México, México [2] Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México
Resumen	Multiple shooting methods have been studied and applied to parameter estimation and optimal control problems, governed by ODEs during the past decades, and also to problems governed by PDEs less frequently. In this work we explore numerically a multiple shooting method via augmented Lagrangian and penalized models, to estimate parameter values of systems modelled by ODEs. Unlike most authors, who prefer algorithms like Gauss- Newton or SQP to solve the associated optimization problems, we apply the BFGS algorithm with inexact line-search, and a variant of a dual ascent method, along with the adjoint equation method to compute derivatives or gradients. The proposed method, with the mentioned ingredients, is simple and efficient. It estimates accurately parameters of the Lorentz equations in chaotic regime. The same multiple shooting approach can also be applied to optimal control problems, particularly to simultaneously control the transition between equilibrium states and the stabilization around an unstable equilibria of a model that describes the dynamics of a Josephson Junction Array, a quantum interference device used in superconductivity.
Palabras claves	Multiple shooting, parameter estimation, optimal control, augmented Lagrangian, quasi-Newton method

Revista	**REVISTA KAWSAYPACHA: SOCIEDAD Y MEDIO AMBIENTE**
ISSN	2523-2894
DOI	https://doi.org/10.18800/kawsaypacha.202402.D012
Título del Artículo	Sustainability in irrigation management in six agro-exporting companies of *Carica papaya L.* in the department of Petén, Guatemala
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Resumen	In the department of Petén, Guatemala, there are agro-exporting companies producing papaya (*Carica papaya L.*) with significant water requirements. However, the extraction of water can potentially lead to the depletion of groundwater and surface water sources in the medium term. Therefore, the objective of this research was to evaluate the sustainability of irrigation systems in six agro-exporting papaya (*Carica papaya L.*) companies in the department of Petén, Guatemala. For the analysis of sustainability in the studied companies, descriptive and inferential statistics were used, applying measures of dispersion, variability, skewness, and normality tests of data. With this information, a model for evaluating the sustainable management of water resources was proposed. Data collection instruments included observation, a structured questionnaire, an unstructured questionnaire, and a registration form with experimental indicators that allowed for the proposal of a model with an index to assess sustainability. The application of the model resulted in the Irrigation Sustainable Impact Index with a rating of 0.64, which places the irrigation systems of the studied companies in the category of low sustainability. Therefore, it is recommended to implement management systems based on plans for vegetative restoration in water recharge areas, studies of surface and groundwater quality, as well as environmental impact assessments, and to foster a culture of sustainable education and efficient water use for irrigation.
Palabras claves	Car use; Attitudes; Climate change awareness; Socioeconomic factors; México.

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