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SUPLEMENTO ESPECIAL

ARTÍCULOS CIENTÍFICOS

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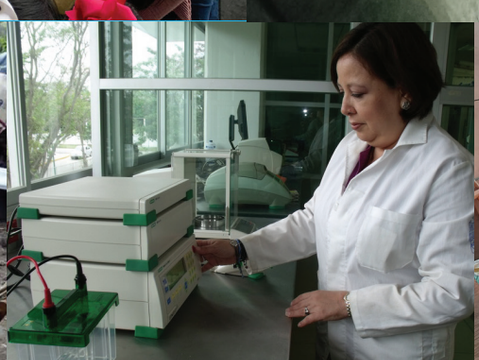

Secretaría de Investigación, Posgrado y Vinculación,
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Departamento de Fortalecimiento de Grupos de Investigación

ARTÍCULOS CIENTÍFICOS

Revista: REVISTA DE INVESTIGACIONES-UNIVERSIDAD DEL QUINDIO, Volumen: 33, Número: 1, ISSN: Print ISSN: 1794-631x/Electronic ISSN: 2500-5782, DOI: 10.33975/riuq.vol33n1.517

Título del Artículo: The use of a Ria Tool in Support of Decision-Making Implemented in a Social Impact Project: Tabasco Case

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Resumen:
The purpose of this research is to establish the importance of using an information system for the State Operator Instance (IOE) of the México Connected Project (PMC) in the State of Tabasco, with the aim of improving the registration, control and access to the information of the sites and public spaces in relation to the various activities that are carried out manually for identification, as well as the storage of the information is kept in various archives, which contain varied structures, which generates waste of time and lack of organization at the time of making appropriate decisions for the project. For the development of the solution proposal, it was decided to make an RIA application and use the SCRUM development methodology, using new programming techniques for web environments. As a result, substantial improvements were obtained from the system that allows managing the information of the 6,763 sites proposed to be benefited with high-speed internet in the State, complying with each of the requirements associated with it; Scalable and easy to use for the user. In addition to a unified and homogeneous database

Revista: JOURNAL OF PARASITOLOGY, Volumen: 107, Número: 1, ISSN: Print ISSN: 0022-3395/Electronic ISSN: 1937-2345, DOI: 10.1645/20-71

Título del Artículo: Prevalence and factors associated with ectoparasite infestations in dogs from the state of Tabasco, México

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Resumen:
This study was carried out to identify the ectoparasites that infest owned dogs in the state of Tabasco, México. In total, 1,302 dogs were sampled in the 5 ecological regions of Tabasco. The dog owners were surveyed to identify the factors associated with infestations. Ectoparasites were identified using taxonomic keys. Eleven species of ectoparasites were observed. General prevalence was 26.65%. Rhipicephalus sanguineus and Ctenocephalides felis were the most prevalent and abundant ectoparasites. The most important factors associated with ectoparasite infestations in the studied dogs were living outdoors, being a non-purebred, having short hair, being dark-haired, and having a body condition <3. Ectoparasite studies such as the one presented herein generate important information to create control programs focused on decreasing infestations in companion animals and thus the likelihood of zoonotic transmission of pathogens.

Revista: STUDIES IN SECOND LANGUAGE LEARNING AND TEACHING, Volumen: 11, Número: Issue 1, ISSN: Print ISSN 2083-5205/ Electronic ISSN: 2084-1965, DOI: 10.14746/ssllt.2021.11.1.6

Título del Artículo: Foreign language education in rural schools: Struggles and initiatives among generalist teachers teaching English in México Autores e instituciones de adscripción: Izquierdo, J (Izquierdo, Jesus)[1]; Zuniga, SPA (Aquino Zuniga, Silvia Patricia)[1] ; Martinez, VG (Garcia Martinez, Veronica)[1]

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Resumen:
In many countries, English as a foreign/second language (L2) teaching has become compulsory in urban and rural public schools. In rural areas, the challenges for the implementation of this state-sanctioned policy have been explored among L2 teaching specialists. However, this mixed-methods study considered a different teacher group and examined the struggles and initiatives of generalist teachers who are obligated to teach English in rural schools. To this end, data were collected from 115 teachers in 17 rural secondary schools in the Southeast of Mexico. First, the participants completed a survey with closed-ended questions that elicited information about teacher education, teaching experience and knowledge of the rural school system. Then, a subsample of participants completed an individual thematized semi-structured interview. They were selected on the basis of L2 teacher education involvement. In the survey data, response patterns were identified using frequency analyses. The interview data were analyzed using categorical aggregation. The data revealed that the generalist teachers struggle with L2 professionalization, sociocultural and instructional challenges. Nonetheless, only few participants have been engaged in L2 teacher education which could help them overcome these challenges. Instead, they rely upon limited strategies to counteract the day-today challenges at the expense of effective L2 teaching practices.

Revista: PLOS ONE, Volumen: 16, Número: e0245394, ISSN: 1932-6203, DOI:10.1371/journal.pone.0245394
Título del Artículo: Features of patients that died for COVID-19 in a hospital in the south of México: A observational cohort study
Autores e instituciones de adscripción: Ruiz-Quinonez, JA (Arturo Ruiz-Quinonez, Jesus)[1]; Guzmán-Priego, CG (Guadalupe Guzmán-Priego, Crystell)[2]; Nolasco-Rosales, GA (Alberto Nolasco-Rosales, German)[2]; Tovilla-Zárate, CA (Tovilla-Zárate, Carlos Alfonso)[3]; Flores-Barrientos, OI (Israel Flores-Barrientos, Oscar)[1]; Narváez-Osorio, V (Narváez-Osorio, Victor)[1]; Baeza-Flores, GD (del Carmen Baeza-Flores, Guadalupe)[2]; González-Castro, TB (Beatriz González-Castro, Thelma)[4]; López-Brito, CR (Ramon López-Brito, Carlos)[1]; Denis-García, CA (Alberto Denis-García, Carlos)[1]; Pérez-García, A (Pérez-García, Agustin)[1]; Juárez-Rojop, IE (Esther Juárez-Rojop, Isela)[2]
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Resumen:
Due to the wide spread of SARS-CoV2 around the world, the risk of death in individuals with metabolic comorbidities has dangerously increased. México has a high number of infected individuals and deaths by COVID-19 as well as an important burden of metabolic diseases; nevertheless, reports about features of Mexican individuals with COVID-19 are scarce. The aim of this study was to evaluate demographic features, clinical characteristics and the pharmacological treatment of individuals who died by COVID-19 in the south of México.
Methods.
We performed an observational study including the information of 185 deceased individuals with confirmed diagnoses of COVID-19. Data were retrieved from medical records. Categorical data were expressed as proportions (%) and numerical data were expressed as mean +/- standard deviation. Comorbidities and overlapping symptoms were plotted as Venn diagrams. Drug clusters were plotted as dendrograms.
Results.
The mean age was 59.53 years. There was a male predominance (60.1%). The mean hospital stay was 4.75 +/- 4.43 days. The most frequent symptoms were dyspnea (88.77%), fever (71.42%) and dry cough (64.28%). Present comorbidities included diabetes (60.63%), hypertension (59.57%) and obesity (43.61%). The main drugs used for treating COVID-19 were azithromycin (60.6%), hydroxychloroquine (53.0%) and oseltamivir (27.3%).
Conclusions.
Mexican individuals who died of COVID-19 had shorter hospital stays, higher frequency of shortness of breath, and higher prevalence of diabetes than individuals from other countries. Also, there was a high frequency of off-label use of drugs for their treatment.

Revista: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, Volumen:118, Número: e2014929118, ISSN: 0027-8424, DOI: 10.1073/pnas.2014929118
Título del Artículo: Epigenetic inheritance of DNA methylation changes in fish living in hydrogen sulfide-rich springs
Autores e instituciones de adscripción: Kelley, JL (Kelley, Joanna L.)[1]; Tobler, M (Tobler, Michael)[2]; Beck, D (Beck, Daniel)[1]; Sadler-Riggleman, I (Sadler-Riggleman, Ingrid)[1]; Quackenbush, CR (Quackenbush, Corey R.)[1]; Rodríguez, LA (Rodríguez, Lenin Arias)[3]; Skinner, MK (Skinner, Michael K.)[1,4]
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Resumen:
Environmental factors can promote phenotypic variation through alterations in the epigenome and facilitate adaptation of an organism to the environment. Although hydrogen sulfide is toxic to most organisms, the fish Poecilia mexicana has adapted to survive in environments with high levels that exceed toxicity thresholds by orders of magnitude. Epigenetic changes in response to this environmental stressor were examined by assessing DNA methylation alterations in red blood cells, which are nucleated in fish. Males and females were sampled from sulfidic and nonsulfidic natural environments; individuals were also propagated for two generations in a nonsulfidic laboratory environment. We compared epimutations between the sexes as well as field and laboratory populations. For both the wild-caught (F0) and the laboratory-reared (F2) fish, comparing the sulfidic and nonsulfidic populations revealed evidence for significant differential DNA methylation regions (DMRs). More importantly, there was over 80% overlap in DMRs across generations, suggesting that the DMRs have stable generational inheritance in the absence of the sulfidic environment. This is an example of epigenetic generational stability after the removal of an environmental stressor. The DMR-associated genes were related to sulfur toxicity and metabolic processes. These findings suggest that adaptation of P. mexicana to sulfidic environments in southern Mexico may, in part, be promoted through epigenetic DNA methylation alterations that become stable and are inherited by subsequent generations independent of the environment.

Revista: ENERGY AND BUILDINGS, Volumen: 249, Número: 111209, ISSN: Print ISSN 0378-7788/Electronic ISSN 1872-6178 ISSN: 2084-1965, DOI: 10.1016/j.enbuild.2021.111209
Título del Artículo: Empirical model of hygrothermal behavior of masonry wall under different climatic conditions using a hot box
Autores e instituciones de adscripción: Tejeda-Vázquez, R (Tejeda-Vázquez, R.)[1]; Macias-Melo, EV (Macias-Melo, E., V)[2]; Hernández-Pérez, I (Hernández-Pérez, I)[2]; Aguilar-Castro, KM (Aguilar-Castro, K. M.)[2]; Serrano-Arellano, J (Serrano-Arellano, J.)[3]
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Resumen:
In this work, the evaluation of a solid block wall is presented to obtain an empirical model that relates the global heat transfer coefficient (U-value) with temperature and vapor pressure, the latter variable associated with relative humidity. To evaluate the hygrothermal behavior of the sample, a hot box was designed, built, and instrumented. The hot box was calibrated using a reference sample of extruded polystyrene plate to quantify the heat gains through its envelope. The solid block wall sample was evaluated in three configurations: simple wall (B), wall with a mortar coat (RB), and a wall with a mortar coat on both sides (RBR). As a result, three empirical models were obtained to determine the U-value. The temperature was the variable with the most significant influence on the determination of this parameter. The models were applied under six different climatic conditions, identifying the hygrothermal behavior of each solid block wall configuration. The RBR configuration was the one that presented the lowest heat gain for cities with a warm-humid climate with a U-value of 4 W m−2 °C−1, while the highest heat gain was obtained with the RB configuration in dry weather. The obtained empirical models allow selecting the appropriate configuration for a specific geographic location, according to the user needs.

Revista: ACTA REUMATOLOGICA PORTUGUESA RESEARCH, Volumen: 46, Número: 2, ISSN: 0303-464X, DOI: N/A
Título del Artículo: Efficacy of hypertonic dextrose infiltrations for pain control in rotator cuff tendinopathy: systematic review and meta-analysis
Autores e instituciones de adscripción: Arias-Vázquez, PI (Arias-Vázquez, P., I)[1]; Tovilla-Zárate, CA (Tovilla-Zárate, C. A.)[1]; González-Graniel, K (González-Graniel, K.)[1]; Burad-Fonz, W (Burad-Fonz, W.)[2]; González-Castro, TB (González-Castro, T. B.)[3,4]; López-Narváez, ML (López-Narváez, M. L.)[5]; Castillo-Avila, RG (Castillo-Avila, R. G.)[6]; Arcila-Novelo, R (Arcila-Novelo, R.)[7]
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Resumen:
Introduction. Our study aimed to assess the efficacy of hypertonic dextrose infiltrations (HDI) for pain control in individuals with rotator cuff tendinopathy and to assess the characteristics of the treatment and the presence of side effects or adverse reactions through a systematic review and meta-analysis.
Methods. The search for the articles was performed in the electronic databases Plumed, Embase, Scopus, Scielo, Dialnet and Google Scholar, published up to August 2020. The keywords used were "prolotherapy" or "proliferation therapy" or "hypertonic dextrose infiltrations" or "hypertonic dextrose injection" and "Rotator Cuff" or "Rotator Cuff Injury" or "Rotator Cuff Tear" or "Rotator Cuff Tendinosis" or "supraspinatus". The effectiveness of HDI was expressed as standardized mean difference (d) and 95% CI.
Results. In the pooled analysis, HDI were an effective intervention to reduce long-term pain in patients with rotator cuff tendinopathy when compared to controls; furthermore, in the individual analyses, HDI were more effective in the short, medium and long terms than noninvasive treatments, and more effective in the long-term than infiltrations with local anesthetics. On the other hand, HDI were not more effective than injections with corticosteroids or PRE Finally; no complications or serious adverse events were observed when HDI were used.
Conclusions. We found that HDI reduced long term pain in individuals with rotator cuff. HDI could be an alternative to non-invasive treatments when no favorable results can be achieved. However, due to the small number of studies included in this meta-analysis, new studies are necessary to clarify the efficacy and safety of this intervention.

Revista: SCIENTIFIC REPORTS, Volumen: 11, Número: 15809, ISSN: 2045-2322, DOI: 10.1038/s41598-021-95140-1
Título del Artículo: Effects of high rosuvastatin doses on hepatocyte mitochondria of hypercholesterolemic mice
Autores e instituciones de adscripción: Díaz-Zagoya, JC (Díaz-Zagoya, Juan C.)[1]; Marin-Medina, A (Marin-Medina, Alejandro)[3]; Zetina-Esquivel, AM (Zetina-Esquivel, Alma M.)[2]; Blé-Castillo, JL (Blé-Castillo, Jorge L.)[2]; Castell-Rodríguez, AE (Castell-Rodríguez, Andres E.)[1]; Juárez-Rojop, IE (Juárez-Rojop, Isela E.)[2]; Miranda-Zamora, R (Miranda-Zamora, Rodrigo)[1]
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Resumen:
Statins are the cornerstone of therapy for individuals with hyperlipidemia. The aim of this study was to analyze the undesirable effects of mild, moderate and high doses of rosuvastatin in CD-1 male mice who received a cholesterol-rich diet, focusing on the morphological and functional changes on hepatocyte mitochondria. In a mouse model we studied the combined administration of a cholesterol-rich diet along with mild and moderate doses of rosuvastatin (1, 2.5 or 5 mg/kg/day) during several days. After the animals were sacrificed, liver mitochondria were isolated for microscopic studies and to analyze the respiratory function. The respiratory control (state-3/state-4) was evaluated in mice who received high doses of rosuvastatin. Rosuvastatin doses higher than 20 mg/kg/day induced premature death in mice with a hypercholesterolemic diet, but not in mice with a cholesterol-free diet. Doses from 2.5 to 5 mg/kg/day also induced morphological and functional alterations in mitochondria but these hypercholesterolemic animals survived longer. Giving 1 mg/kg/day, which is close to the maximal therapeutic dose for humans, did not affect mitochondrial architecture or respiratory function after two months of treatment. We analyzed the effect of rosuvastatin on hepatic t because it is where statins are mainly accumulated and it is the main site of endogenous cholesterol synthesis. Our results contribute to understand the side effects of rosuvastatin in hypercholesterolemic mice, effects that could also affect humans who are intolerant to statins.

Revista: CALDASIA, Volumen: 43, Número: 1, ISSN: Print ISSN 0366-5232/Electronic 2357-3759, DOI: 10.15446/caldasia.v43n1.84499
Título del Artículo: Diversity and vertical distribution of borers beetles (Coleoptera: Bostrichidae, Curculionidae: Scolytinae, Platypodinae) in a mangrove in Tabasco, México
Autores e instituciones de adscripción: Gerónimo-Torrese, JD (del Carmen Gerónimo-Torrese, José)[1]; Pérez-de la Cruz, M (Pérez-de la Cruz, Manuel)[1]; de la Cruz-Pérez, A (de la Cruz-Pérez, Aracely)[1]; Arias-Rodríguez, L (Arias-Rodríguez, Lenin)[1]; Burelo-Ramos, CM (Manuel Burelo-Ramos, Carlos)[1]
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Resumen:
Diversity, and for the first time, the vertical distribution of borer insects (Scolytinae, Platypodinae, and Bostrichidac) are described as associated with the edge and inside of a mangrove. To determine the diversity in these sites, insects were captured with interception traps baited with 70 % ethyl alcohol and using ultraviolet light as an attractant. To analyze the vertical distribution, traps baited with ethyl alcohol were placed at 1.5 m, 6 m, and 12 m in height. According to the diversity index (D-1), the border was 1.36 more diverse than the inside with 15.82 and 11.67 respectively. The traps used at 6 m captured the greatest diversity both at the edge and inside, although the 1.5m traps captured the greatest abundance. At the edge, ten of the twelve months presented statistically significant differences in their abundance and for the inside, these differences were presented in eight of the twelve months. Regarding diversity (D-1), at the edge, these statistical differences occur in April, May, July, and august, while in the inside in June, November, and December. The differences described may be related to the variability in the environmental conditions of the mangrove, which produces changes in the structure and composition of the insect communities.

Revista: AQUACULTURE, Volumen: 736958, **Número: 736958, ISSN: Print ISSN 0044-8486/Electronic ISSN 1873-5622, DOI: 10.1016/j.aquaculture.2021.736958**

Título del Artículo: Effect of dietary carbohydrates on growth performance, feed efficiency and glucose metabolism in common snook *(Centropomus undecimalis)* and yellowtail snapper *(Ocyurus chrysurus)* juveniles

Autores e instituciones de adscripción: Arenas, M (Arenas, Martin)[1]; Álvarez-González, A (Álvarez-González, Alfonso)[2]; Barreto, A (Barreto, Alvaro)[3]; Sánchez, A (Sánchez, Adolfo)[4]; Suárez-Bautista, J (Suárez-Bautista, Jaime)[4]; Escalante, K (Escalante, Karla)[4]; Gaxiola, G (Gaxiola, Gabriela)[4]
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Resumen:
In recent years, interest in commercial farming of the common snook *Centropomus undecimalis* and yellowtail snapper *Ocyurus chrysurus* has been increasing in the Atlantic West; however, these species are carnivorous with a high protein requirement in the diet. A 75-day feeding trial was conducted to evaluate the effect of dietary carbohydrates on growth performance, feed efficiency, glycemic response, digestive and key liver enzymes of intermediary metabolism of C. undecimalis and *O. chrysurus*. Two diets were formulated to contain 51.6% protein, 7.9% lipid and 20% corn starch (High digestive carbohydrates diet, HC) or 20% wheat bran (Control diet, C). Growth performance was not affected by dietary carbohydrates in both species. The feed efficiency (FE) and protein efficiency ratio (PER) improved in C. undecimalis fed the HC diet; however, for *O. chrysurus*, FE and PER were not affected by the HC diet. The hepatic glycogen and whole-body lipid content increased in C. undecimalis fed the HC diet, but this did not occur in *O. chrysurus*. Intestinal amylase activity increased in both species with the HC diet. Blood glucose peaked in C. undecimalis six hours after being fed with the HC diet (7.8 mmol L-1), whereas the glucose peak in *O. chrysurus* occurred until nine hours (14.1 mmol L-1). Hepatic glucokinase (GK) activity increased with the HC diet in both fish species. However, at the molecular level, GK mRNA expression was higher in C. undecimalis fed the HC diet, but for *O. chrysurus*, GK mRNA expression did not differ between diets. Glucose-6-phosphate dehydrogenase (G6PDH) and 6-phosphogluconate dehydrogenase (6PGDH) activities increased only in C. undecimalis fed the HC diet. Pyruvate kinase (PK) increased and fructose-1, 6-bisphosphatase (FBPase) decreased in both species fed the HC diet. Alanine aminotransferase (ALT) activity was unaffected by experimental diets, but *O. chrysurus* showed higher activity than C. undecimalis. These results suggest that both fish species are able to adapt to a high-carbohydrate diet by reorganization carbohydrate metabolism. However, C. undecimalis showed a greater capacity to utilize and store carbohydrates than *O. chrysurus*.

Revista: APPLIED LEGUME RESEARCH L, Volumen: 44, Número: 2 ISSN: Print ISSN 0250-5371/ Electronic ISSN 0976-0571, DOI: 10.18805/LR-553

Título del Artículo: Edaphic and Foliar Biofortification of Common Black Bean *(Phaseolus vulgaris L.)* with Iron

Autores e instituciones de adscripción:Felix, JW (Felix, J. W.)[1]; Sánchez-Chávez, E (Sánchez-Chávez, E.)[2]; De-la-Cruz-Lázaro, E (De-la-Cruz-Lazaro, E.)[1]; Márquez-Quiroz, C (Márquez-Quiroz, C.)[1]
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Resumen:
Background: Biofortification is the process by which the nutritional quality of food crops is improved through agronomic practices, conventional plant breeding, or modern biotechnology. The objective in this work was to determine the effect of iron on mineral content, proximal composition, bioactive compound content and antioxidant activity in the bean grain.
Methods: In this present work, we biofortificated plants of common bean *(Phaseolus vulgaris L.)*, with doses of iron sulfate (0, 0.25 and 0.50 g) and foliar iron chelate (0, 25, 50 and 100 mu M). In the grain content mineral (iron, zinc, copper and nickel), proximal composition (moisture, ash, crude fiber, fat, protein, carbohydrates and energy), total phenols, flavonoids, anthocyanins and antioxidant activity were determined.
Result: Edaphic and foliar biofortification increased iron content in the grain. All treatment combinations containing some edaphic or foliar doses of iron increased levels of ash fat, protein, crude fiber, total phenols and anthocyanins, and decreased carbohydrate content and energy. Nine treatment combinations, including the control, possessed the highest antioxidant activities (84.96-89.76%).

Revista: LIFE-BASEL, Volumen: 11, Número: 566, ISSN: 2075-1729, DOI: 10.3390/life11060566

Título del Artículo: Effects of Dietary Calcium Propionate Supplementation on Hypothalamic Neuropeptide Messenger RNA Expression and Growth Performance in Finishing Rambouillet Lambs

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Resumen:
The objective of this experiment was to evaluate the effects of feeding different levels concentrations of dietary calcium propionate (CaPr) on lambs' growth performance; ruminal fermentation parameters; glucose-insulin concentration; and hypothalamic mRNA expression for neuropeptide Y (NPY), agouti-related peptide (AgRP), and proopiomelanocortin (POMC). Thirty-two individually fed lambs were randomly assigned to four treatments: (1) control diet (0 g/kg of CaPr), (2) low CaPr, (30 g/kg dry matter (DM)), (3) medium CaPr, (35 g/kg DM), and (4) high CaPr (40 g/kg DM). After 42 days of feeding, lambs were slaughtered for collecting samples of the hypothalamus. Data were analyzed as a complete randomized design, and means were separated using linear and quadratic polynomial contrast. Growth performance was not affected ($p >= 0.11$) by dietary CaPr inclusion. The ruminal concentration of total volatile fatty acids (VFA) increased linearly ($p = 0.04$) as dietary CaPr increased. Likewise, a linear increase in plasma insulin concentration ($p = 0.03$) as dietary CaPr concentration increased. The relative mRNA expression of NPY exhibited a quadratic effect ($p < 0.01$), but there were significant differences in the mRNA expression of AgRP and POMC ($p >= 0.10$). Dietary calcium propionate did not improve lamb growth performance in lambs feed with only forage diets. Intake was not correlated with feed intake with mRNA expression of neuropeptides.

Revista: FRONTIERS IN ECOLOGY AND EVOLUTION, Volumen: 9, Número: 619193, ISSN: 2296-701X, DOI: 10.3389/fevo.2021.619193

Título del Artículo: Diurnal Changes in Hypoxia Shape Predator-Prey Interaction in a Bird-Fish System

Autores e instituciones de adscripción: Lukas, J (Lukas, Juliane)[1,2]; Auer, F (Auer, Felix)[3]; Goldhammer, T (Goldhammer, Tobias)[3]; Krause, J (Krause, Jens)[1,2,4]; Romanczuk, P (Romanczuk, Pawel)[4,5,6]; Klamser, P (Klamser, Pascal)[5,6]; Arias-Rodríguez, L (Arias-Rodríguez, Lenin)[7]; Bierbach, D (Bierbach, David)[1,2,4]
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Resumen:
In the past decade, different groups of additives (probiotics, oligosaccharides, and plant extracts) have been widely researched and used in worldwide aquaculture. Recently, other groups, such as biopolymers (e.g., poly-beta-hydroxybutyrate) with prebiotic properties, have been investigated. Among biopolymers, the use of pure polyhydroxyalkanoate (PHA; composition = 95-100%) as a feed additive in aquaculture has not been studied yet. Therefore, the aim of the present study was to research the effects of four supplementation levels of pure PHA on growth, survival, feed and nutrient utilization, apparent digestibility coefficients (ADCs), and hematology of Nile Tilapia *Oreochromis niloticus*. Five isonitrogenous and isolipidic diets were designed, including a control (C) diet without PHA supplementation. Remaining diets were supplemented with the following levels of PHA: PHA 0.1% (basal diet + 0.1% PHA), PHA 0.5% (basal diet + 0.5% PHA), PHA 1.0% (basal diet + 1.0% PHA), and PHA 2.0% (basal diet + 2.0% PHA). After a 70-d feeding test period, the PHA 0.5% and PHA 1.0% experimental groups showed significantly higher final body weight, weight gain, specific growth rate, lipid efficiency and productive value, and ADCs of lipid and energy compared to those of the C group. Protein efficiency ratio was significantly higher in fish fed the PHA 0.1%, PHA 0.5%, and PHA 1.0% diets compared to the C group. Protein productive value significantly increased in the PHA 1.0% group. The ADC of protein was significantly higher in fish fed diets supplemented with any level of PHA compared to C fish. Regarding hematological parameters, hematocrit value showed a significant increase in fish fed PHA 0.1% compared to the C group. Leukocyte composition (%) did not show significant differences among experimental groups. Based on polynomial regression analysis, the optimum inclusion levels of PHA in Nile Tilapia diets were 0.82-0.92% for growth performance, 1.0-1.1% for nutrient utilization, 1.0-1.2% for ADCs, and 1.34% for hematocrit. Cost-benefit ratio analysis revealed nonsignificant but numerical differences among experimental diets. Results suggest that pure PHA, when supplemented at 0.1, 0.5, 1.0, or 2.0%, has certain positive effects on growth, nutrient and feed utilization, and ADCs without compromising Nile Tilapia hematology or health.

Revista: COMMUNICATIONS IN STATISTICS-SIMULATION AND COMPUTATION, Volumen: 91, Número: 12, ISSN: Print ISSN 0361-0918/Electronic ISSN 1532-4141, DOI: 10.1080/03610918.2021.1908553

Título del Artículo: Comparison of some interval estimation methods for the parameters of the gamma distribution

Autores e instituciones de adscripción: Nájera, E (Nájera, Edilberto)[1]; Bolivar-Cime, A (Bolivar-Cime, Addy)[1]
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Resumen:
Several methods of finding interval estimators of the parameters of the gamma distribution are considered in the literature. In this work we compare the following methods: Wald confidence intervals; profile likelihood intervals; Bayesian intervals using the Jeffreys prior, the reference prior when alpha is the parameter of interest and beta the nuisance parameter, the reference prior when beta is the parameter of interest and alpha the nuisance parameter; and three fiducial methods. The comparison is done using Montecarlo simulations, in terms of the coverage probabilities and the expected lengths of the intervals, considering small, medium and large sample sizes. As an important result of the simulations we found that the fiducial methods are the best when the sample size is very small, and as the sample size increases all the methods, except the Wald confidence intervals, have a similar behavior. An example of application is shown considering earthquake data of México.

Revista: THEORETICAL AND APPLIED CLIMATOLOGY, Volumen: 145, Número: 3-4, ISSN: Print ISSN 0177-798X/Electronic ISSN 1434-4483, DOI: 10.1007/s00704-021-03683-0

Título del Artículo: Comparison of four methods to select the best probability distribution for frequency analysis of annual maximum precipitation using Monte Carlo simulations

Autores e instituciones de adscripción: Flowers-Cano, RS (Flowers-Cano, Roberto S.)[1]; Ortiz-Gómez, R (Ortiz-Gómez, Ruperto)[2]
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Resumen:
Hydrologic design requires estimation of extreme hydrological events, whose magnitude and probability are estimated using a probability distribution function (PDF). Since estimations can vary considerably depending on the PDF that is used, the selection of an appropriate PDF is essential. This study compares the performance of four different methods for selecting probability distributions analyzing 56 data series of annual maximum precipitation in México: the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), the Kolmogorov-Smirnov (KS) test, and the standard error of fit (SEF) statistic. Comparison of these methods was done by means of Monte Carlo simulations, in which data were generated from a mother distribution, and the ability of the different selection procedures to choose the right distribution was observed. Several different simulation scenarios were analyzed, varying the mother distribution and the sample size. None of the selection criteria proved to be superior to the others in all cases. AIC and BIC performed better when the mother distribution had two parameters, while the KS and SEF performed better when the mother distribution had three parameters. It was observed that the SEF and KS tend to select three- parameter distributions even when a third parameter is not justified, whereas the AIC and BIC tend to Peñalize excessively the addition of a third parameter, even when it is necessary.

Revista: REVISTA MVZ CORDOBA, Volumen: 26, **Número: 3, ISSN: 1909-0544, DOI: 10.21897/rmvz.2106**
Título del Artículo: Effect of dietary carbohydrates on growth performance, feed efficiency and glucose metabolism in common snook *(Centropomus undecimalis)* **and yellowtail snapper** *(Ocyurus chrysurus)* **juveniles**
Autores e instituciones de adscripción: Peralta-Torres, J (Peralta-Torres, Jorge)[1]; Hernández-Hernández, M (Hernández-Hernández, Maloy)[2]; López-Segovia, N (López-Segovia, Nery)[3]; Boldo-Leon, X (Boldo-Leon, Xavier)[2]; Trujillo-Castillo, L (Trujillo-Castillo, Luis)[2]; Quinonez-Díaz, L (Quinonez-Díaz, Laura)[2]; Betancur-Ancona, D (Betancur-Ancona, David)[4]; Blé-Castillo, J (Blé-Castillo, Jorge)[2]; Olvera-Hernández, V (Olvera-Hernández, Viridiana)[2]
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Resumen:
Objective. Evaluate the hygienic-sanitary, physicochemical and microbiological quality of bovine milk for sale, produced in a family stable and in three public markets in Tabasco state. Materials and methods. The hygienic-sanitary quality was determined according to general information of the farm, facilities, milking process, cleaning and disinfection. Physicochemical quality was determined by evaluating total proteins, casein, butyric fat, lactose, non-fatty solids and density. Microbiological quality was determined by titratable acidity, alcohol test, somatic cell content, oxide-reduction potential, foreign matter, bacterial inhibitors, and aerobic mesophilic bacteria. Results. The milk produced in the family stable was evaluated with the highest physicochemical and microbiological quality, in reference to the standards evaluated by the official Mexican regulations established in México by the Council for the promotion of the quality of milk and its derivatives, A. C. Instead, milk in three public markets, it was considered as rejection, indicating possible contamination during milking processes, as well as handling and transport to public markets. Conclusions. Milk samples from public markets were considered not suitable for human consumption or for the production of by-products.

Revista: NEOTROPICAL ICHTHYOLOGY, Volumen: 19, Número: e200095, ISSN: 1679-6225, DOI: 10.1590/1982-0224-2020-0095
Título del Artículo: Comparative characterization of digestive proteases in redhead cichlid *(Vieja melanurus)* **and twoband cichlid** *(Vieja bifasciata) (Percoidei: Cichlidae)*
Autores e instituciones de adscripción:Frías-Quintana, CA (Alfonso Frías-Quintana, Carlos)[1]; Peña-Marín, ES (Saul Peña-Marín, Emyr)[2,3]; Ramírez-Custodio, CD (Ramírez-Custodio, Carlos David)[2]; Martínez-García, R (Martínez-García, Rafael)[2]; Jiménez-Martínez, LD (Daniel Jiménez-Martínez, Luis)[4]; Camarillo-Coop, S (Camarillo-Coop, Susana)[2]; Guerrero-Zárate, R (Guerrero-Zárate, Rocio)[2]; Asencio-Alcudia, GG (Gertrudys Asencio-Alcudia, Gloria)[2]; Álvarez-González, CA (Alfonso Álvarez-González, Carlos)[2]
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Resumen:
In the Southeast of México, there are many native cichlids with commercial interest such as redhead cichlid *(Vieja melanurus)* and twoband cichlid *(V. bifasciata)*, which have a great local demand and excellent meat quality. However, it is necessary to implement their culture based on nutrition studies and digestive biochemistry. This study's objective was to characterize these two cichlids' digestive proteases (pH, temperature, and inhibitors) through biochemistry techniques. Results showed that *V. melanurus and V. bifasciata* have a digestive capacity analogous to other omnivore fishes, where the optimal pH values of stomach proteases (4 and 2, respectively) and intestinal proteases (6 and 12, respectively), the optimal temperature of acid (35 degrees C and 55 degrees C, respectively) and alkaline proteases (45 degrees C and 55 degrees C, respectively) are quite similar. Both species presented high thermal and pH stabilities. Inhibition showed that *V. melanurus* is more sensitive to specific inhibitors for alkaline proteases than V. bifasciata. In conclusion, V. bisfasciata and V. melanurus have different digestive protease patterns. Both species can hydrolyze different protein ingredients to formulate a specific diet. Nevertheless, V. bifasciata is more resistant to the presence of inhibitors, which allow it to include vegetable proteins in its diet.

Revista: REVISTA MEXICANA DE INGENIERÍA QUÍMICA, Volumen: 20, Número: 1, ISSN: 1665-2738, DOI: 10.24275/rmiq/Proc1289
Título del Artículo: Characterization of slug flow in heavy oil and gas mixtures
Autores e instituciones de adscripción: Carcano-Silvan, CA (Carcano-Silvan, C. A.)[1]; Soto-Cortes, G (Soto-Cortes, G.)[2]; Rivera-Trejo, F (Rivera-Trejo, F.)[1]
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Resumen:
In multiphase flow, one of the most recurring flow patterns is called slug. Its characterization is essential to predict the drop pressure and liquid holdup. To analyze it, an option is to use a capacitive or inductive sensor to transform the liquid-gas fraction present in the pipeline to a voltage time-series. The method chosen for the signal processing is decisive for the correct estimation of the frequency and the fraction of the slug, among other parameters. Recently, analysis methodologies have been developed that reduce the subjectivity of signal processing and tend to improve the quality of the results. This paper applied an algorithm optimization based on probabilistic methods. The methodology proposed was compared against the original, finding that with the optimization, there is the better performance when working at inclination angles close to the vertical; the above suggests a combined use of both methods.

Revista: NORTH AMERICAN JOURNAL OF AQUACULTURE, Volumen: 83, Número: 4, ISSN: Print ISSN 1522-2055/Electronic ISSN 1548-8454, DOI: 10.1002/naaq.10183

Título del Artículo: Dietary Pure Polyhydroxyalkanoate Effects on Growth, Nutrient Utilization, Apparent Digestibility, and Hematology in Nile Tilapia *(Oreochromis niloticus)*

Autores e instituciones de adscripción: Rodríguez-Estrada, U (Rodríguez-Estrada, Uriel)[1]; Tachibana, L (Tachibana, Leonardo)[2]; Dias, DD (de Carla Dias, Danielle)[2]; Ben-Hamed, S (Ben-Hamed, Said)[2]; Sampaio-Goncalves, G (Sampaio-Goncalves, Giovani)[2]; Sussel, FR (Rosa Sussel, Fabio)[2]; Ranzani-Paiva, MJ (Ranzani-Paiva, María José)[2]
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Resumen:
In the past decade, different groups of additives (probiotics, oligosaccharides, and plant extracts) have been widely researched and used in worldwide aquaculture. Recently, other groups, such as biopolymers (e.g., poly-beta-hydroxybutyrate) with prebiotic properties, have been investigated. Among biopolymers, the use of pure polyhydroxyalkanoate (PHA; composition = 95-100%) as a feed additive in aquaculture has not been studied yet. Therefore, the aim of the present study was to research the effects of four supplementation levels of pure PHA on growth, survival, feed and nutrient utilization, apparent digestibility coefficients (ADCs), and hematology of Nile Tilapia Oreochromis niloticus. Five isonitrogenous and isolipidic diets were designed, including a control (C) diet without PHA supplementation. Remaining diets were supplemented with the following levels of PHA: PHA 0.1% (basal diet + 0.1% PHA), PHA 0.5% (basal diet + 0.5% PHA), PHA 1.0% (basal diet + 1.0% PHA), and PHA 2.0% (basal diet + 2.0% PHA). After a 70-d feeding test period, the PHA 0.5% and PHA 1.0% experimental groups showed significantly higher final body weight, weight gain, specific growth rate, lipid efficiency and productive value, and ADCs of lipid and energy compared to those of the C group. Protein efficiency ratio was significantly higher in fish fed the PHA 0.1%, PHA 0.5%, and PHA 1.0% diets compared to the C group. Protein productive value significantly increased in the PHA 1.0% group. The ADC of protein was significantly higher in fish fed diets supplemented with any level of PHA compared to C fish. Regarding hematological parameters, hematocrit value showed a significant increase in fish fed PHA 0.1% compared to the C group. Leukocyte composition (%) did not show significant differences among experimental groups. Based on polynomial regression analysis, the optimum inclusion levels of PHA in Nile Tilapia diets were 0.82-0.92% for growth performance, 1.0-1.1% for nutrient utilization, 1.0-1.2% for ADCs, and 1.34% for hematocrit. Cost-benefit ratio analysis revealed nonsignificant but numerical differences among experimental diets. Results suggest that pure PHA, when supplemented at 0.1, 0.5, 1.0, or 2.0%, has certain positive effects on growth, nutrient and feed utilization, and ADCs without compromising Nile Tilapia hematology or health.

Revista: AQUACULTURE, Volumen: 535, Número: 736399, ISSN: Print ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2021.736399

Título del Artículo: Characterization of digestive enzymes during early ontogeny of white Snook *(Centropomus viridis)*

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Resumen:
The white snook *(Centropomus viridis)* is a species with great aquaculture potential, therefore, the present study aims two objectives; 1) to characterize digestive enzymatic activity during larval development and; 2) characterize the diversity and functionality of digestive enzymes in an early juvenile stage of *C. viridis*. On first feeding, larvae were 2.75 +/- 0.09 mm total length and grew to 24.35 +/- 4.35 mm after 42 days. The specific activity of acid proteases was detected with low activity from day 1 (Days after hatching, DAH) to day 21, and increased at 23 DAH, reaching maximum activity at 40 DAH. Meanwhile, digestive enzymatic activity of alkaline proteases was observed from hatching to day 40. From hatching until 40 DAH, the presence of alkaline proteases, trypsin, chymotrypsin, leucine aminopeptidase, alpha-amylase and lipase were detected with different activity patterns. Total and specific activity of digestive enzymes on juveniles showed higher activity of acid than alkaline proteases, while alpha-amylase had a higher activity than lipases. The maximum activity of acid proteases was observed at 40 degrees C and at pH 2.0, while digestive alkaline proteases showed maximum activity at 60 degrees C. alpha-amylases and lipases showed their maximum activities at 50 degrees C. The maximum alkaline protease and a-amylase activities were found at pH 7 to 9. The enzymatic activity of juvenile's acid proteases was highly inhibited by Pepstatin A (96%), however the activity of alkaline proteases incubated with PHEN, TLCK, SBTI, PMFS, and OVO showed reductions of 51.29, 30.16, 27.98, 27.26, and 24.68% respectively. Lipase activity was totally inhibited with Ebelactone B, and highly inhibited by Ebelactone A, Orlistat, 1% SDS, and PMFS (96.12, 77.16, 64.22, and 51.29%, respectively). Seven bands (102.6, 65.7, 58.9, 40.6, 27.4, 21.5, and 15.8 kDa) resolved by protein electrophoresis were detected with alkaline protease activity, identified as serine proteases and metalloproteases, and three bands (57, 43.9, and 32.6 kDa) with lipase-like activity were also identified. These results show that C. viridis ontogeny entails an indirect development of its digestive system with a functional stomach on day 23, and characterized by increases in pepsin activity. Indeed, white snook ontogeny shows a similar developmental trajectory to other carnivorous marine fish, showing a diversity of alkaline proteases that work in a wide range of pH and temperatures. Thus, the identification of these enzymes provides advantages to formulate white snook aqua-feeds.

Revista: REVISTA DE INVESTIGACIONES-UNIVERSIDAD DEL QUINDIO, Volumen: 33, Número: 1, ISSN: Print ISSN 1794-631X/Electronic ISSN: 2500-5782, DOI: 10.33975/riuq.vol33n1.514

Título del Artículo: Business intelligence: a key tool for the use of information and business decision-making

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Resumen:
In the current environment where small and medium-sized companies develop, it has changed as a result of the commercial opening that took place after the Second World War. The objective of this article is to analyze the importance of applying Business Intelligence as a key tool for small and medium-sized companies to use information as an input to support business decision-making. The methodology used is through a document review with a tool, with a descriptive qualitative approach. Scientific databases such as Dialnet, ScienceDirect and Scielo and keywords such as Business intelligence, Decision making, Information were used to carry out a theoretical, critical and comparative analysis of the contributions of the Business Intelligence authors. The results indicate that Business Intelligence has the components of an interactive process, explore, analyze, data warehouse, technology and communicate. It is concluded that Business Intelligence is a valuable and viable solution for organizations because through its use and application they provide decision makers with the facility to make decisions supported by knowledge.

Revista: FISH PHYSIOLOGY AND BIOCHEMISTRY, Volumen: 47, Número: 4, ISSN: Print ISSN 0920-1742/Electronic ISSN 1573-5168, DOI: 10.1007/s10695-021-00976-z

Título del Artículo: Changes in digestive enzyme activities during the early ontogeny of the South American cichlid *(Cichlasoma dimerus)*

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Resumen:

Cichlasoma dimerus is a neotropical cichlid that has been used as a biological model for neuroendocrinology studies. However, its culture is problematic in terms of larval feeding to allow having enough fry quantity and quality. Larviculture requires full knowledge about the digestive system and nutrition; therefore, this study was intended to assess the digestive enzymes' changes at different ages during the early ontogeny. Acid protease activity was detectable from the first day after hatching (dah), increasing to its maximum peaks on 9 dah. In contrast, alkaline proteases had low activity in the first days of life but reached their maximum activity on 17 dah. Chymotrypsin, L-aminopeptidase, and carboxypeptidase A activities increased at 6 dah, while trypsin activity was first detected on 13 dah and reached its maximum activity on 17 dah. Lipase and alpha-amylase activity were detectable at low levels in the first days of life, but the activity fluctuated and reaching its maximum activity at 21 dah. Alkaline phosphatase continued to oscillate and had two maximum activity peaks, the first at 6 dah and the second at 19 dah. Zymograms of alkaline proteases on day 6 dah six revealed four activity bands with molecular weights from 16.1 to 77.7 kDa. On 13 dah, two more activity bands of 24.4 and 121.9 kDa were detected, having a total of six proteases. The enzymatic activity analyzes indicate the digestive system shows the low activity of some enzymes in the first days after hatching, *Cichlasoma dimerus* is a neotropical cichlid that has been used as a biological model for neuroendocrinology studies. However, its culture is problematic in terms of larval feeding to allow having enough fry quantity and quality. Larviculture requires full knowledge about the digestive system and nutrition; therefore, this study was intended to assess the digestive enzymes' changes at different ages during the early ontogeny. Acid protease activity was detectable from the first day after hatching (dah), increasing to its maximum peaks on 9 dah. In contrast, alkaline proteases had low activity in the first days of life but reached their maximum activity on 17 dah. Registering significant increases on 6 dah and the maximum peaks of activities around at 17 dah. Therefore, we recommend replacing live food with dry feed and only providing dry feed after day 17 dah.

Revista: MODERN PHYSICS LETTERS A, Volumen: 36, Número: 21, ISSN: Print ISSN: 0217-7323/Electronic ISSN: 1793-6632, DOI: 10.1142/S0217732321501534

Título del Artículo: An anisotropic charged fluid with Chaplygin equation of state

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Resumen:

A stellar model with an electrically charged anisotropic fluid as a source of matter is presented. The radial pressure is described by a Chaplygin state equation, Pr(*p*)=μc2 − /(c2), while the anisotropy Δ Pt−Pr=r2f(r) is annulled in the center of the star (f(r) is regular and f(0)≠0), the electric field, is also annulled in the center. The density pressures and the tangential speed of sound are regular, while the radial speed of sound is monotonically increasing. The model is physically acceptable and meets the stability criteria of Harrison–Zeldovich–Novikov and in respect of the cracking concept the solution is unstable in the region of the center and potentially stable near the surface. A graphic description is presented for the case of an object with a compactness rate u=0.27336, mass M=1.77M and radius R=9.56 km that matches the star Vela X-1. Also, the interval of the central density c [1.176977292,1.308791129]1018kg/m3, which is consistent with the expected magnitudes

Revista: CERAMICS INTERNATIONAL A, Volumen: 47, Número: 19, ISSN: 0272-8842, DOI: 10.1016/j.ceramint.2021.06.170

Título del Artículo: pH dependent morphology and texture evolution of ZnO nanoparticles fabricated by microwave-assisted chemical synthesis and their photocatalytic dye degradation activities

Autores e instituciones de adscripción: M.Arellano-Cortaza [1], E. Ramírez-Morales [1], U. Pal [2], G. Pérez-Hernández [1], L. Rojas-Blanco [1]

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Resumen:

ZnO nanostructures are well-known photocatalysts for the degradation of toxic organic dyes and their morphology, size, and other physicochemical properties play important roles in their photocatalytic performance. To study the effect of size, morphology, and synthesis conditions in photocatalytic performance, we synthesized ZnO nanoparticles of different morphologies through a simple microwave-assisted chemical process at different pH values of the reaction mixture. Different pH values of the reaction mixture produced ZnO nanoparticles of different morphologies and sizes. The nature of the pH controlling agent and final pH of the reaction mixture were seen to have considerable effects on the lattice parameters and microstrain of the ZnO nanocrystals, along with their photocatalytic performance. We observed that while the ZnO nanostructures synthesized at very high pH values of the reaction mixture have a high specific surface area, their photocatalytic activity is higher when they are synthesized at acidic pH or pH near the isoelectric point of ZnO. The results demonstrate that the photocatalytic activity of ZnO nanostructures not only depends on their size or specific surface area but also strongly depends on the concentration of catalytic sites at their surface.

Revista: JOURNAL OF THE WORLD AQUACULTURE SOCIETY, Volumen: N/A, Número: N/A, ISSN: Electronic ISSN:1749-7345, DOI: 10.1111/jwas.12847

Título del Artículo: Variations of digestive enzymatic activity of the longarm river prawn, *Macrobrachium tenellum* (Smith 1871) adapted from the wild to culture with prepared meals

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Resumen:
Macrobrachium tenellum is an omnivorous freshwater prawn living in rivers near the coast and in coastal lagoons with potential to be cultured. It is distributed in rivers, estuaries, and coastal lagoons, and in each of those habitats, it has access to food items with different features and nutritional content. In this research, it has been tested if this variety of food availability has an immediate effect on their digestive enzymatic activity once animals are brought to laboratory and fed with different meals. Wild prawns were captured in a river and coastal lagoon, and after acclimation, they were fed with three different experimental diets. Total alkaline protease, trypsin, chymotrypsin, lipase, and amylase were measured from prawns fed experimental diets at 15 and 30 days. There were significant differences in the enzymatic activity of prawns depending on their original habitat and diet. However, the proportion in which these enzymes are expressed in the prawns from different treatments remains proportional to what was observed in wild specimens, as reported in previous research. We consider that the study of this phenomenon can contribute to a better understanding of the nutritional needs of this species if a species-specific diet needs to be prepared.

Revista: HEALTH INFORMATICS JOURNAL, Volumen: 27, Número: 3, ISSN: Print ISSN: 1460-4582 Electronic ISSN: 1741-2811, DOI: 10.1177/14604582211021471

Título del Artículo: Toward a machine learning model for a primary diagnosis of Guillain-Barre syndrome subtypes

Autores e instituciones de adscripción: Daniel Alarcón-Narváez[1], José Hernández-Torruco[1], Betania Hernández-Ocaña[1], Oscar Chávez-Bosquez[1], Jerusa Marchi[2], Juan José Méndez-Castillo[3]
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Resumen:
Guillain-Barré Syndrome (GBS) is a neurological disorder affecting people of any age and sex, mainly damaging the peripheral nervous system. GBS is divided into several subtypes, in which only four are the most common, demanding different treatments. Identifying the subtype is an expensive and time-consuming task. Early GBS detection is crucial to save the patient's life and not aggravate the disease. This work aims to provide a primary screening tool for GBS subtypes fast and efficiently without complementary invasive methods, based only on clinical variables prospected in consultation, taken from clinical history, and based on risk factors. We conducted experiments with four classifiers with different approaches, five different filters for feature selection, six wrappers, and One versus All (OvA) classification. For the experiments, we used a data set that includes 129 records of Mexican patients and 26 clinical representative variables. Random Forest filter obtained the best results in each classifier for the diagnosis of the four subtypes, in the same way, this filter with the SVM classifier achieved the best result (0.6840). OvA with SVM classifier reached a balanced accuracy of 0.8884 for the Miller-Fisher (MF) subtype.

Revista: SYMMETRY-BASEL, Volumen: 13, Número: 2, ISSN: Electronic ISSN: 2073-8994, DOI: 10.3390/sym13020214

Título del Artículo: Attention-Inspired Artificial Neural Networks for Speech Processing: A Systematic Review

Autores e instituciones de adscripción: Noel Zacarias-Morales [1], Pablo Pancardo [1], José Adán Hernández-Nolasco [1], Matias Garcia-Constantino [2]
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Resumen:
Artificial Neural Networks (ANNs) were created inspired by the neural networks in the human brain and have been widely applied in speech processing. The application areas of ANN include: Speech recognition, speech emotion recognition, language identification, speech enhancement, and speech separation, amongst others. Likewise, given that speech processing performed by humans involves complex cognitive processes known as auditory attention, there has been a growing amount of papers proposing ANNs supported by deep learning algorithms in conjunction with some mechanism to achieve symmetry with the human attention process. However, while these ANN approaches include attention, there is no categorization of attention integrated into the deep learning algorithms and their relation with human auditory attention. Therefore, we consider it necessary to have a review of the different ANN approaches inspired in attention to show both academic and industry experts the available models for a wide variety of applications. Based on the PRISMA methodology, we present a systematic review of the literature published since 2000, in which deep learning algorithms are applied to diverse problems related to speech processing. In this paper 133 research works are selected and the following aspects are described: (i) Most relevant features, (ii) ways in which attention has been implemented, (iii) their hypothetical relationship with human attention, and (iv) the evaluation metrics used. Additionally, the four publications most related with human attention were analyzed and their strengths and weaknesses were determined.

Revista: PHYSIOLOGICAL REPORTS, Volumen: 9, Número: 16, ISSN: Electronic ISSN: 2051-817X , DOI: 10.14814/phy2.14984
Título del Artículo: The role of spinal cord extrasynaptic alpha 5GABAAR receptors in chronic pain
Autores e instituciones de adscripción: Rodolfo Delgado- Lezama[1], Mariana Bravo- Hernández[2], Úrzula Franco- Enzástiga[3], Yarim E. De la Luz- Cuellar[3], Nara S. Alvarado- Cervantes[1], Guadalupe Raya-Tafolla[1], Luis A. Martínez- Zaldivar[1], Alberto Vargas- Parada[1], Erick J. Rodríguez- Palma[3], Guadalupe C. Vidal- Cantú[3], Crystell G. Guzmán- Priego[4], Jorge E. Torres- López[4,5], Janet Murbartián[6], Ricardo Felix[7], Vinicio Granados- Soto[3]

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Resumen:

Chronic pain is an incapacitating condition that affects a large population worldwide. Until now, there is no drug treatment to relieve it. The impairment of GABAergic inhibition mediated by α GABAA receptors (α GABAAR) is considered a relevant factor in mediating chronic pain. Even though both synaptic and extrasynaptic GABAA inhibition are present in neurons that process nociceptive information, the latter is not considered relevant as a target for the development of pain treatments. In particular, the extrasynaptic α 5GABAARs are expressed in laminae I-II of the spinal cord neurons, sensory neurons, and motoneurons. In this review, we discuss evidence showing that blockade of the extrasynaptic α 5GABAARs reduces mechanical allodynia in various models of chronic pain and restores the associated loss of rate-dependent depression of the Hoffmann reflex. Furthermore, in healthy animals, extrasynaptic α 5GABAAR blockade induces both allodynia and hyperalgesia. These results indicate that this receptor may have an antinociceptive and pronociceptive role in healthy and chronic pain-affected animals, respectively. We propose a hypothesis to explain the relevant role of the extrasynaptic α 5GABAARs in the processing of nociceptive information. The data discussed here strongly suggest that this receptor could be a valid pharmacological target to treat chronic pain states.

Revista: AUTOIMMUNITY REVIEWS, Volumen: 20, Número: 11, ISSN: Electronic:1568-9972, DOI: 10.1016/j.autrev.2021.102946
Título del Artículo: The immune-neuroendocrine system in COVID-19, advanced age and rheumatic diseases
Autores e instituciones de adscripción: Luis J. Jara [1,2], Berenice López Zamora [3], Irving Ordoñez- Gonzáles [4], María F. Galaviz- Sánchez [2, 10], Caroline I. Gutierrez- Melgarejo [5,10], Miguez Ángel Saavedra [2,6], Olga Vera- Lastra [2,7] María Pilar Cruz- Domínguez [2, 9], Gabriela Medina [2,8]

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Resumen:

The immune-neuroendocrine system is essential to maintain homeostasis specially during stress situations. COVID-19 infection, produce stress, and activates the immune–neuroendocrine system. During the COVID-19 pandemic, multiple studies indicate that the most vulnerable populations are older adults and patients with comorbidities including autoimmune rheumatic diseases. These patients suffer from extremely important situation that favors the inflammatory hyper response due to an inadequate reaction of the immune-neuroendocrine system. This review aims to analyze the findings of the effect of COVID-19 on the hypothalamic–pituitary–adrenal, hypothalamic–pituitary–gonadal, hypothalamic–pituitary–thyroid, hypothalamic–pituitary–prolactin axes, and central nervous system, as well as the response to this viral infection in older adults and patients with rheumatic diseases and perspectives about this subject.

Revista: TELECOMMUNICATIONS POLICY, Volumen: 45, Número: 10, ISSN: Electronic: 0308-5961, DOI: 10.1016/j.telpol.2021.102226
Título del Artículo: The digital divide between high school students in Colombia
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Resumen:

By extracting information from Saber 11 Tests taken by high school students close to finishing that educational period in Colombia, the digital divide evolution over time and its determinants are analyzed using a probabilistic model and the calculation of georeferenced concentration indexes. The topic is relevant as previous studies have shown a positive relationship between access to ICTs (Information and Communication Technologies), educational achievement, and economic growth. It is concluded that the digital divide persists over time and is accentuated in rural areas. Besides, the determinants of access are variable since they are out of the students' control. Therefore, this study deals with the social inequity around the access that students have, depending on their geographical location, into digital scenarios that allow them to increase their intellectual capital on the context of the situated cognition.

Revista: CANADIAN JOURNAL OF CHEMICAL ENGINEERING, Volumen: 99, Número: N/A, ISSN: Electronic ISSN: 1939-019X, DOI: 10.1002/cjce.23948

Título del Artículo: Effects of high oil viscosity on oil-gas downward flow in deviated pipes. Part 2: Holdup and pressure gradient

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Resumen:
In Part 1 of this work, new experimental data on high viscosity oil-gas flow in inclined downward flow were presented. Flow patterns transitions were identified and analyzed, and the performance of some flow pattern prediction models was validated. This study uses the same experimental data set generated for a mixture of air-oil (with a viscosity of 213 mPa · s) flowing in a 50.8 mm internal diameter pipe with inclination angles of –45°, –60°, –70°, –80°, –85° for a ranges 0.05 m/s-0.7 m/s and 0.7 m/s-7 m/s of superficial liquid and gas velocities, respectively, to investigate holdup and pressure gradient behaviour. The holdup and pressure recovery effects are explained in terms of the predominant transport mechanism through phase slippage and the mechanical energy balance. For a constant superficial liquid velocity, the average-liquid holdup results show a discernible behaviour dependent on the relative velocity between phases (slip velocity). Consistently, results show a switch between the gravity or shear forces transport mechanism, that coincides with the switch of a sign of the total pressure gradient (pressure recovery effect). Performance analysis of the available mechanistic models has been presented. The results are not satisfactory, which justifies the need for a detailed study of the effects of viscosity and the inclination of the pipe in liquid-gas mixtures.

Revista: JOURNAL OF SOIL SCIENCE AND PLANT NUTRITION, Volumen: 21, Número: 3, ISSN: Print ISSN: 0718-9508/ Electronic ISSN: 0718-9516, DOI: 10.1007/s42729-021-00515-y

Título del Artículo: Assessment of TiO2 Nanoparticles on Maize Seedlings and Terrestrial Isopods Under Greenhouse Conditions

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Resumen:
This study aims to evaluate the TiO2 nanoparticles (NPs) and soil type effect on Zea mays L. seedlings and to assess the effect of the TiO2 NPs retained in organic matter on terrestrial isopods *(Armadillidium vulgare, Latreille)*. It was hypothesized that (i) the combined effect of soil pH and minerals, and the addition of TiO2 NPs harm maize plants, and (ii) increasing Ti's content in organic matter (OM) causes mortality in the isopods. Under greenhouse conditions, the effects of TiO2 NPs (300 and 600 mg kg–1 dry soil) were assessed during 21 days in acid or alkaline soils, with an organic matter layer above the soil surface (3 cm). An inhibitory effect of TiO2 NPs on plant length and root size was clearly shown at 21 days in alkaline soil but not in acid soils. Besides, a higher amount of Ti was accumulated on maize tissues in alkaline soil than those grown on acid soil. An increase in TiO2 NPs caused higher Ti concentrations in the soil organic matter (SOM), which harmed the survival and weight of the terrestrial isopods when the OM is consumed. Isopods limit the consumption of NPs at high concentrations while the NPs leached toward soil deeper layers allowing a reduction in plant height and root size in Z. mays plants grown in alkaline soil. Nevertheless, further investigations on the effect of TiO2 NPs in the association of plants and terrestrial isopods in natural conditions are required.

Revista: REACTIVE & FUNCTIONAL POLYMERS, Volumen: 163, Número: N/A, ISSN: 1381-5148, DOI: 10.1016/j.reactfunctpolym.2021.104887

Título del Artículo: Antifungal properties of poly[2-(dimethylamino)ethyl methacrylate] (PDMAEMA) and quaternized derivatives

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Resumen:
A series of poly[2-(dimethylamino)ethyl methacrylate]s (PDMAEMAs) of different molar mass were synthesized by reversible addition-fragmentation chain transfer (RAFT) polymerization. The polymers were subsequently treated with two different alkyl halides (1-iodobutane (BuI) and iodomethane (MeI)) to obtain a library of 21 PDMAEMAs with different degree of quaternization (DQ). This is the first report where the antifungal activity of these polymers is assessed for different fungi relevant in biomineralization and aesthetic biodeterioration of stone surfaces. The antifungal activity was assessed with the minimum inhibitory concentration (MIC), the minimum fungicidal concentration (MFC) and the mycelia growth inhibition in plate for the most promising materials. The obtained results demonstrated that all evaluated polymers possess certain level of antifungal activity against the evaluated fungi (even unquaternized PDMAEMAs). However, polymers of low molar mass (series III) revealed predominantly fungicidal activity at low values of MFC (from 2500 to 9.7 μg mL–1). Unexpectedly, the performed mycelia growth inhibition tests showed that the DQ has a less significant effect on the antifungal properties of the polymers than the polymer molar mass. Hence, the antifungal activity of these polymers may depend to a great extent on the physiological and morphological characteristics of the fungi, wherein the best antifungal activity was observed in III-M2, III-B1 and III-B2. It is worth mentioning that this detailed screening contributes to a better understanding of PDMAEMA-based composites that can be utilized in the development and optimization of low-cost and accessible antimicrobial protective coatings for petrous surfaces in cultural heritage monuments or modern buildings.

Revista: ACTA BOTANICA MEXICANA, Volumen: 128, Número: N/A, ISSN: Electronic ISSN: 2448-7589, DOI: 10.21829/abm128.2021.1966

Título del Artículo: Taxonomic confirmation of Gelidium americanum *(Gelidiaceae, Rhodophyta)* in Tabasco, Mexico, using a morphological and molecular approach

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Resumen:
Background and Aims: *Gelidium americanum* is widely distributed on the Atlantic coast of Mexico; however, so far no studies have been conducted to confirm its taxonomic identity using molecular markers and morphological characters. The objective of this study was to confirm the taxonomic identity, with a morphological and molecular approach, of the specimens identified as *G. americanum* previously collected in the coastal lagoon of Mecoacán, Tabasco, Mexico.
Methods: Three specimens of G. americanum were collected in the Mecoacán lagoon, Tabasco, Mexico. The material was morphologically analyzed by observations with stereoscopic and optical microscopes. For molecular analysis, DNA was extracted from the samples using the CTAB method; *rbcL* and *COI-5P* markers were amplified with the Phire Plant Direct kit (PCR), the sequences were edited in Bioedit and aligned in Clustal W. Next, a Maximum Verisimilitude analysis was done in RaxML, a Bayesian Inference analysis in MrBayes, and genetic distances were calculated in MEGA.
Key results: The sequences obtained in the present study for rbcL and COI-5P markers were nested in the clade of samples previously identified with molecular markers as *Gelidium americanum*. In addition, genetic distances were minimal, the morphological characters coincided with what was previously described for other locations in the Atlantic, despite having a limited number of specimens.

Revista: INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH, Volumen: 18, Número: 11, ISSN: Electronic ISSN: 1660-4601, DOI: 10.3390/ijerph18115622

Título del Artículo: Knowledge, Emotions and Stressors in Front-Line Healthcare Workers during the COVID-19 Outbreak in Mexico

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Resumen:
The aim of this study was to explore the knowledge, emotions and perceived stressors by healthcare workers who were in contact with infected patients during the COVID-19 outbreak. An online cross-sectional survey was applied. Data were collected from N = 263 healthcare workers in Tabasco State, Mexico. We developed and administered a questionnaire, which consisted of sociodemographic characteristics, plus four sections. The sections evaluated were (1) knowledge of COVID-19; (2) feelings/emotions during the COVID-19 outbreak; (3) factors that caused stress and (4) factors that helped to reduce stress. Surveyed individuals were divided into three groups: physicians, nurses and other healthcare workers. When we evaluated their knowledge of COVID-19 we observed that the majority of healthcare workers in the three groups reported that they knew about COVID-19. Physicians indicated that they felt insecure about practicing their profession (62.5%) due to the high risk of being in contact with SARS-CoV-2. With regards to stressor factors, the risk of transmitting COVID-19 to their families was the main factor causing moderate to high stress (95.4%). Finally, we found that "your profession puts your life at risk" was the only factor associated with feeling nervous and scared (PR: 3.15; 95% CI: 1.54–6.43). We recommended health education campaigns, introductory courses on COVID-19 and other infectious diseases, management protocols and the provision of protection equipment to health workers in order to reduce personal and professional fears of contagion and to improve the health system in Mexico when facing epidemics.

Revista: APPLIED SCIENCES-BASEL, Volumen: 11, Número: 16, ISSN: Electronic ISSN: 2076-3417, DOI:10.3390/app11167616

Título del Artículo: Experimental Evaluation and Theoretical Optimization of an Indirect Solar Dryer with Forced Ventilation under Tropical Climate by an Inverse Artificial Neural Network

Autores e instituciones de adscripción: M. Moheno-Barrueta [1], O. May Tzuc [2], G. Martínez-Pereyra [1], V. Cardoso-Fernández [3], L. Rojas-Blanco [1], E. Ramírez-Morales [1], G. Pérez-Hernández [1], A. Bassam [3]
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Resumen:
In this theoretical–experimental study is presented a hybridization strategy based on the application of an inverse artificial neural network model (ANNi) coupled with metaheuristic optimization algorithms to optimize the drying velocity (vd) of an active indirect solar dryer for plantain and taro (Colocasia antiquorum). In the experimental stage, both fruits were evaluated in periods from 9:00 a.m. to 5:00 p.m. under a humid tropical climate region, varying the voltage of the air extractor fan (at 6 V, 9 V, and 12 V) to control the fan velocity. The experimental results showed that the maximum drying velocities were reached at 9 V, achieving a drying velocity of 1.5, 0.9, and 0.55 g/min, with a total drying time of 465 min for the taro, and 1.46, 1.46, and 0.36 g/min, with a total drying time of 495 min, for the plantain. As a result of the drying curves, it was observed that the drying velocity is higher in taro than in plantain. Subsequently, an artificial neural network (ANN) architecture was trained using the database generated from the solar dryer's experimental stage. Six environmental variables and one operational variable were considered as the model's inputs, feeding the ANN to estimate the drying velocity (vd), obtaining a linear regression coefficient R = 0.9822 between the experimental and simulated data. A sensitivity analysis was performed to determine the impact of all the input variables. A hybrid strategy based on ANNi was developed and evaluated with three metaheuristic optimization algorithms; the best result was obtained by genetic algorithms (ANNi-GA) with an error percentage of 0.83% and an average computational time of 4.3 s. The scope of this optimization strategy was to obtain a theoretical result that allows predicting the behavior of the dryer and improving its performance for its practical application in future work through the implementation in development boards. Lastly, the optimization strategy presented is not limited to indirect solar dryers and opens a research window for evaluating other solar drying technologies.

Revista: JOURNAL OF ENTOMOLOGICAL SCIENCE, Volumen: 56, Número: 1, ISSN: Electronic ISSN: 0749-8004, DOI: 10.18474/0749-8004-56.1.116

Título del Artículo: Tachinid (Diptera: Tachinidae) Parasitoids of Fall Armyworm (Lepidoptera: Noctuidae) Larvae Infesting Maize in Chiapas, Mexico

Autores e instituciones de adscripción: VV. Hernández-García[1], L.A. Rodríguez-Larramendi[1], C. Ríos-Velasco [2,1],R. Osorio-Osorio[3,1],M.A. Salas-Marina[1]

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Resumen:

Biological control is a viable alternative to chemical control of fall armyworm, Spodoptera frugiperda J. E. Smith *(Lepidoptera: Noctuidae)* larvae, especially in the maize-producing areas of the state of Chiapas, Mexico, where the ecological stability, diversity, and abundance of natural enemies of *S. frugiperda still prevail*. In some maize-producing areas in the state of Chiapas, synthetic chemical insecticides are not widely used, thus preserving a diversity of arthropod species including natural enemies important in natural pest population management. Furthermore, surveys in other maize-producing regions in Mexico and in other countries report a number of Hymenoptera and Diptera that occur as parasitoids of *S. frugiperda* (Bahena et al. 2010, Proc. XXXIII Congr. Nac. Contr. Biol., pp. 204–209). We recognize the importance of continual surveys to update our knowledge of the incidence of natural control agents of S. frugiperda in order to develop and refine management strategies and to circumvent the use of synthetic control products, which are increasingly less effective and more expensive. Therefore, the objective of this study was the search, collection, and molecular taxonomic identification of tachinid (Diptera: Tachinidae) parasitoids of *S. frugiperda* in the state of Chiapas, Mexico.

Revista: REVISTA DE INVESTIGACIONES-UNIVERSIDAD DEL QUINDIO, Volumen: 33, Número: 1, ISSN: Print ISSN: 1794-631X, Electronic ISSN: 2500-5782, DOI: 10.33975/riuq.vol33n1.471

Título del Artículo: The mindfulness in athletes and athletes

Autores e instituciones de adscripción: Aída Dinorah García-Álvarez[1], Rosario del Carmen Suarez-Jiménez[2], Jorge Rebollo-Meza[3]

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Resumen:

Athletes are in constant training and education to develop and excel in different disciplines, this in turn requires great physical and psychological effort because must compete against each other countless times throughout their careers, thus creating in some way a constant pressure to “stand out” and “be the best”, resulting in equally constant stress. For this reason, it is necessary to carry out mindfulness sessions, which can vary in different techniques. Mindfulness seeks to impose the belief that it is necessary to change the usual emotions, sensations and thoughts that create this stress and athletes and athletes are taught to create a positive intention in order to improve their sports performance with an emphasis on thought control and the use of self-dialogue, this proposes relating one’s own internal states such as feeling and thinking in a different way, not trying to change or eliminate them, but taking them as a way of relating them to said states, this being called Mindfulness. Similarly, the application of mindfulness reduces the probability of presenting various psychological disorders, such as neuroticism, alexithymia, anxiety, depression, somatization, hostility, impulsivity, vulnerability to psychiatric diseases, addictions, aggressiveness and impulsivity

Revista: JCR-JOURNAL OF CLINICAL RHEUMATOLOGY, Volumen: 27, Número: N/A, ISSN: Print: 1076-1608 Electronic: 1536-7355, DOI: N/A

Título del Artículo: The impact of covid-19 infection in a cohort of patients with systemic sclerosis

Autores e instituciones de adscripción: Jara Quezada, Luis Javier[1]; Cruz Dominguez, Maria Del Pilar[2] ; Morales Montalvo, Susana Isabel[3]; Lastra, Olga Vera[4]; Lopez Zamora, Berenice[5]; Medina, Gabriela[6]; Ordonez Gonzalez, Irvin[7]; Montes Cortes, Daniel Hector[8]

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Resumen:

Objectives:

The aim was to determine the clinical evolution and the prognosis of COVID-19 in a cohort of patients with systemic sclerosis (SSc).

Methods:

During the pandemic we had continuous contact by digital media with a cohort of 197 patients with SSc. If they presented a condition that met the suspicious definition of COVID-19 disease, the polymerase chain reaction test for SARS-CoV-2 was performed and their evolution was followed every 24 hours until they were asymptomatic, or death occurred. Patients with COVID-19 were treated on a regular basis by the outpatient or in-hospital without interfering with their treatment.

Results: Thirteen patients, 57 years of age (range 50 to 77), 9 diffuse cutaneous (dcSSc) and 4 limited cutaneous (lcSSc) become ill with COVID-19 during 9 months of follow-up. Immunosuppressors drugs used at the time of illness were 6 mycophenolate mofetil, 2 methotrexate, 4 low-dose of prednisone. Seven patients had interstitial lung disease (ILD). Main symptoms were chest pain, cough, dyspnea, dysgeusia and anosmia, 1 had mild symptoms without pneumonia, 11 had mild pneumonia and received outpatient treatment, 1 only one had severe pneumonia requiring hospital management. One used supplemental oxygen as part of her treatment for lung fibrosis but additionally 4 used it during her illness. Only one (7.7%) had severe pneumonia was hospitalized and died at 77 years of age. Three patients discontinued their immunosuppressants during the pandemic and among them was the patient who died. Image 1

Conclusion: COVID-19 disease in patients with SSc can be overcome in most cases, even when they have ILD and were using immunosuppressants at the time of contagion with the SARS-CoV-2 virus. The low aggressiveness of atypical pneumonia in these patients may be due to the existence of protective mechanisms that participate in the pathogenesis of SSc.

Revista: 3C EMPRESA, Volumen: 10, Número: 1, ISSN: Electronic: 2254-3376, DOI:10.17993/3cemp.2021.100145.71-81
Título del Artículo: Technological Development And Innovation In Mexico
Autores e instituciones de adscripción: Germán Martínez Prats[1], Francisca Silva Hernánde[2], Mijael Altamirano Santiago[3], José Federico de la Torre Rodrígue[4]
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Resumen:
Globalization and the processes of economic dynamics have permeated nations with a preponderant interest in the area of science and technology. In the case of Mexico, the process of technological development and innovation determines fundamental processes such as the possibility of competing in the market. Given this, it is important to be clear about the conception and importance that the Mexican state has in this regard. This document aims to give a general overview of technological development and innovation in Mexico from the description and analysis of its impact on the economic and social sector of the country in order to strengthen the social well-being of Mexican society in a sustainable and comprehensive way. in addition to identifying the potential in technology to introduce innovation processes or mechanisms, strengthening internal and external demand for innovative products, services, models and businesses created in Mexico, also contributing to physical and human capital with improvements in growth and generation of jobs.

Revista: REVISTA MEXICANA DE BIODIVERSIDAD, Volumen: 92, Número: N/A, ISSN: Electronic ISSN: 1870-3453, DOI: 10.22201/ib.20078706e.2021.92.3660
Título del Artículo: Seasonal home-range size of the white-tailed deer, Odocoileus virginianus thomasi, in a tropical wetland of southeastern Mexico
Autores e instituciones de adscripción: Fernando M. Contreras-Morenoa [1], Mircea G. Hidalgo-Mihart [2], Rafael Reyna-Hurtado [3], Carlos A. López-González [4], Alejandro Jesús-de la Cruz [1]
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Resumen:
White-tailed deer, Odocoileus virginianus, home range size (HR) is one of the most studied aspects of its biology. However, in the southern portion of its distribution, information about its HR is scarce, limiting the capacity for management of the species. To understand the effect of sex and seasonality on the HR of white-tailed deer in a tropical area, we radiotracked 11 adult white-tailed deer (7 females and 4 males) from 2016 to 2019 in a tropical wetland of western Campeche, Mexico. We found female HR to vary from 12.67 ha (±3.52) in the early dry season to 21.57 ha (±18.14) during the late dry season, and from 37.31 ha (±16.93) for the late dry season to 90.16 ha (±72.64) during the rainy season in males. We did not find differences of HR among seasons. However, we found seasonal differences when we tested separately the HR for females and males, showing that female HR is similar among seasons, whereas males had smaller HR during the dry seasons than during the rainy season. Our results indicate that water availability and flooding levels could affect the HR and configuration of the white-tailed deer in the study area.

Revista: REVISTA UNIVERSIDAD Y SOCIEDAD, Volumen: 13, Número: 3, ISSN: Electronic ISSN: 2218-3620. Print: 2415-2897, DOI: N/A
Título del Artículo: Study in medical specialty units and their training in mexico. Perceived quality of nutritional treatment in diabetes
Autores e instituciones de adscripción: Avalos Garcia, María Isabel [1]; Gil Lopez, Nínive [2]; Priego Alvarez, Heberto Romeo [1]
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Resumen:
Diabetes is a disease of great relevance due to its repercussions on the quality of life of patients, as well as the risk of mortality in the face of the COVID-19 pandemic. Its control is a challenge for governments and health systems in the world. The objective of the article is to assess under a qualitative methodology the perception of patients with type 2 diabetes about the quality of nutritional treatment in units of medical specialties in chronic diseases in Mexico. 46 people participated in the research through focus groups. The discourses were documented, coded and categorized, in which it is executed that people with diabetes are cared for under the prescriptive approach of the hegemonic medical model and interpret their nutritional treatment based on myths and beliefs. They also consider that the main support to achieve nutritional control is God, the family and the health professional. In this sense, training on these issues and the perceived quality of nutritional treatment are also valued, which is influenced by the beliefs, culture and socioeconomic status of the patient. The results showed that patients build their own reality in the face of health events, which allows the design of empowerment strategies tailored to their needs to improve the quality of medical care.

Revista: REVISTA MEXICANA DE BIODIVERSIDAD, Volumen: 92, Número: N/A, ISSN: Print ISSN: 1870-3453 Electronic ISSN: 2007-8706, DOI: 10.22201/ib.20078706e.2021.92.3656
Título del Artículo: Phylogenetic position of Dolops bidentata (Ichthyostraca: Argulidae) based on molecular data: first record of the genus in Mexico
Autores e instituciones de adscripción: Omar Lagunas-Calvo [1] Serapio López-Jiménez [2] Alejandro Oceguera-Figueroa [3]
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Resumen:
Species included in the genus Dolops (Ichthyostraca: Argulidae) have been recorded from Southern and Central Africa, Australia, and mainly from South America, with no records from Central or North America. Specimens of Dolops bidentata, previously recorded only in South America, were collected in the state of Tabasco, southern Mexico, parasitizing the common snook, Centropomus undecimalis. Here, we provide the first record of the genus and the species in North America (Mexico) and the first molecular characterization of Dolops bidentata including 1 mitochondrial and 2 nuclear DNA markers, as well as a morphological description of the specimens. The newly generated molecular data were used to preliminarily investigate the phylogenetic relationships of Branchiura and to include Dolops bidentata in a phylogenetic hypothesis. Our results fail to recover the monophyly of Dolops; however, more investigations are needed before any taxonomic change is made.

Revista: REVISTA DE INVESTIGACIONES-UNIVERSIDAD DEL QUINDIO, Volumen: 33, Número: 1, ISSN: Print ISSN: 1794-631X Electronic ISSN: 2500-5782, DOI: 10.33975/riuq.vol33n1.552

Título del Artículo: Social responsibility linked to decent employment. An option for competitiveness in micro-enterprises

Autores e instituciones de adscripción: Aída Dinorah García-Álvarez [1]
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Resumen:
Internal Social Responsibility is the one that is directed to the social aspects of a company's own activity such as the training of its workers, the proportion of a decent job, work incentives, food supports, among others.Because Social Responsibility is an intangible resource, it should not be downplayed, since it can actually generate improvements in the competitiveness of companies in the sector belonging to human resources and it is important to implement in microenterprises. This article addressed the relationship between Social Responsibility with quality of life and the correct use of human capital through decent employment, competitiveness and significant growth in micro-enterprises because this type of activity is usually related to large companies; however, it is possible to apply it in micro-enterprises. Human resources management serves as an important managerial support in the management of labor relations, the strengthening of the organizational culture and the promotion of a good work environment, thus enhancing the retention of talents and increased productivity.On the methodology that was used in the preparation of this article, a literary review of various articles and books was carried out, in addition to conceptual theoretical analysis. The article is also exploratory, aimed at entrepreneurs, owners of microenterprises, people related to the administration of microenterprises, and all the public interested in this topic

Revista: ESTUDIOS GERENCIALES, Volumen: 37, Número: 158, ISSN: Print ISSN: 0123-5923 Electronic ISSN: 2665-6744, DOI: 10.18046/j.estger.2021.158.4436

Título del Artículo: Proposal of a path model to analyze some perceived effects caused by COVID-19 on productive activity

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Resumen:
The objective of the research was to develop a path model with economic factors that the literature directly relates to economic effects and formal and informal employment in the economic recovery stage. The study design was non-experimental, cross-sectional, explanatory. The study was carried out in a state in the Southeast of Mexico, using a random cluster sampling that allowed the selection of 1,151 undergraduate and graduate students to answer the survey. The results show that the fit indicators to the proposed model were acceptable. It is concluded that the theoretical model is based on the data, except the direct relationship between competencies and the effect on productive activity.

Revista: HAEMOPHILIA, Volumen: 27, Número: N/A, ISSN:Print ISSN: 1351-8216 Electronic ISSN: 1365-2516, DOI: doi.org/10.1111/hae.14236

Título del Artículo: Social media as a tool for providing dental care and recommendation to bleeding disorders population during covid-19 pandemic

Autores e instituciones de adscripción: Isidro Olan, L. [1]; Rueda Ventura, M. A. [1,2]; Estrella Castillo, D. [3]; Vega Lizama, E. M. [3]
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Resumen:

Introduction: Social media have been used lately for providing dental care and recommendations for people with bleeding disorders. Is a very useful and safe tool for social distancing. Also allows the communication and rapport with patients.
Objective: To provide dental recommendations and teledentistry by social media in a population with bleeding disorders.
Methods: A closed group by social media was created to provide dental care recommendations as reduction of carbohydrates frequency intake, increase of toothbrushing, teledentistry consultation and also to provide emotional support. During march to october of 2020 due to COVID-19 pandemic. Diverse topics were aborded during social media meetings: toothbrushing techniques and frequency of oral hygiene. handwashing techniques.
Results: The social media group has 88 members: mothers and children, at least one by family. we provide 10 educational talks to parents and in every talk we motivate mothers and children to increase their hygiene habits. Also we provide 10 dental consultation by teledentistry on asynchronic way by other social media. all the consultations were by bleeding due to temporary tooth exfoliation and soft tissue laceration. We indicated local measure as pressure, cold water and soft and cold diet.
Discussion/Conclusion: Social media was an effective way to provide support, dental care recommendations and also to provide teledentistry for people with bleeding disorders. Patients mentioned that they feel comfortable with this type of dental care. We considered that social media will be used for people with disabilities due to hemarthrosis for providing dental care and support them with a minimum risk.

Revista: TROPICAL ANIMAL HEALTH AND PRODUCTION, Volumen: 53, Número: 1, ISSN: Electronic ISSN: 1573-7438, DOI:10.1007/s11250-020-02436-x

Título del Artículo: Requirements of milk intake and intake of milk components for pre-weaning growth of Pelibuey lambs

Autores e instituciones de adscripción: Alfonso Juventino Chay-Canul [1], Martin Ptáek [2], Ulises Macías-Cruz [3], Jorge Alonso Peralta-Torres [1], Nadia Florencia Ojeda-Robertos [1], Raciel Estrada Leon [4], Ricardo Alfonso Garcia-Herrera [5]

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Resumen:

The objective of the present study was to determine the needs of milk intake (MI) and their components (i.e., lactose, fat, protein, and energy) to increase the average daily gain (ADG) of Pelibuey lambs during the pre-weaning period. Data of 62 lambs were used (35 males and 27 females; 32 of single lambing and 30 twins). All lambs were housed in individual pens with their mothers during the first 45 days post-lambing, without access to mother's food. Every 10 d, MI was estimated by the double lamb weighing method, and then, the intake of each milk component was calculated, considering both milk chemical composition and its estimated intake. The ADG was associated with MI and its components through a linear regression analysis. All milk variables were highly ($P < 0.05$; $0.69 \leq r \leq 0.85$) correlated with ADG. The ADG explained ($P < 0.0001$) between 48 and 72% of the variation observed for MI and its components, being lower for fat intake and higher for MI. Given the positive slope parameter (1), an increase of one kilogram of body weight required intakes of 3.1 kg of milk, 117 g of fat, 203 g of protein, 187 g of lactose, or 16.8 MJ of energy. In conclusion, Pelibuey lambs to gain one kilogram of live weight during the pre-weaning period need to consume 3.1 kg of milk having an adequate amount of protein, fat, lactose, and energy.

Revista: REVISTA MEXICANA DE CIENCIAS PECUARIAS, Volumen: 12, Número: 2, ISSN: Electronic ISSN: 2448-6698, DOI: 10.22319/rmcp.v12i2.5540

Título del Artículo: Polyunsaturated fatty acid supplementation during breeding in nulliparous Katahdin ewes: reproductive efficiency and pre-weaning growth in lambs

Autores e instituciones de adscripción: Ricardo Vicente-Pérez [1] Ulises Macías-Cruz [2] Leonel Avendaño-Reyes [2] Enrique O. García-Flores [1] Ricardo Martínez-Martínez [1] Oziel D. Montañez-Valdez [3] José A. Reyes-Gutiérrez [3] Alfonso J. Chay-Canul [4] María M. Crosby-Galván [5]

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Resumen:

A total of 46 nulliparous Katahdin ewes were distributed under a completely randomized block design in two dietary treatments (n=23) around mating to evaluatethe effects ofaddingof polyunsaturated fatty acid (PUFA) onthe reproductive performanceand pre-weaninggrowthin lambs. Treatments were two concentratesformulatedisoenergetic and isoproteicthat containedor did notcontain(control) n-6 PUFA, and both were offered for 42 d(7 d before the breeding period and 35 d ofbreeding period; exposure to ram). Dietary additionof PUFA shortened ($P< 0.05$) the estrus interval, without affecting ($P>0.05$) other reproductive variables. Lambbirth weight did not change ($P> 0.05$) with addition of PUFA; however, the dietary addition of PUFAincreased ($P< 0.05$) pre-weaning growth rate and weaning weight in malelambsbut not female lambs. Dietary addition of PUFA also improved ($P<0.05$) pre-weaninggrowth in twin birth lambs but not in single birth lambs.In conclusion,the inclusion of omega-6 PUFA in the diet of nulliparous Katahdin ewes during breeding is a promising dietarystrategy since it shortens estrus interval without affecting other reproductive variables, and improves pre-weaning growth in male lambs and twin birth lambs.

Revista: HIDROBIOLOGICA, Volumen: 31, Número: 1, ISSN: Electronic: 2448-7333, DOI: 10.24275/uam/izt/dcbs/hidro/2021v31n1/Esqueda

Título del Artículo: Phytoplankton in the tropical lagoon system Carmen Pajonal Machona, Tabasco

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Resumen:

Phytoplankton is considered an important indicator of natural and anthropogenic processes that take place in basins and coastal environments. An example of these systems is the formed by the El Car-men, Pajonal and La Machona lagoons, in which there is intense fishing and oyster farming activity, as well as agricultural activities, oil extraction and forestry in their surroundings. Goals.Identifying the phytoplankton species, with emphasis on the potentially harmful and / or toxic ones, their distribution and differences be-tween the samplings, north winds (2015) and rainy (2016), as well as reporting the physicochemical variables was the aimed of this work. Methods. Net samples with a mesh size of 20 µm were taken and physicoche-mical variables were measured with a water quality sonde. 300 organisms were counted and the specific richness, relative abundances and diversity index were calculated. To identify differences between the two seasons sampled the Mann-Whitney U test was performed. In addition, the most important physicochemical variables were identified to explore their relationship with the species through a distance-based redundancy analysis (dbRDA). Results. A total of 86 species were identified, of which ten are new records and 15 are potentially harmful and / or toxic ones. The taxonomic group with the most species in both seasons was Bacillaryophyta (43 Northeast and 22 Rains). Specific richness was significantly different between seasons. In the north winds season, the most abundant species were from the Cyanoprokaryota and Bacillaryophyta groups, while for rainy season they were from the Dinoflagellata. Conclusions. Water temperature and salinity were the physicochemical variables that defined the phyto-plankton composition in the CPM lagoons; the presence of potentially toxic species is an alert for the lagoon system because it reflects a latent situation that could trigger blooms at any time

Revista: COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY A-MOLECULAR & INTEGRATIVE PHYSIOLOGY, Volumen: 262, Número: N/A, ISSN: Electronic ISSN: 1095-6433, DOI: 10.1016/j.cbpa.2021.111062

Título del Artículo: Soybean protein concentrate as a protein source for totoaba (Totoaba macdonaldi) juveniles: Effect on intermediary metabolism and liver histological organization

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Resumen:

This study aimed to investigate the effects of replacing fish meal (FM) with soybean protein concentrates (SPC) on the intermediary metabolism and health of Totoaba macdonaldi juveniles. Fish (initial weight 50 ± 1 g) were fed for 60 days with eight diets: a reference diet (RD) and seven experimental diets where FM was replaced gradually with 15 to 100% SPC (SPC15, SPC30, SPC45, SPC60, SPC75, SPC90, and SPC100, respectively). Hexokinase (HK), glucokinase (GK), and alanine aminotransferase (ALT) enzyme activities showed highly significant differences ($p < 0.01$) between fish fed RD (0% SPC) compared to fish fed the diets with 60, 75, 90, and 100% SPC. The ALT enzyme shows a highly significant ($p < 0.01$) decrease in activity for fish fed 75, 90, and 100% SPC inclusions compared to fish fed the RD. The aspartate aminotransferase AST/ALT ratio showed a significant increase in activity for fish fed 100% soybean compared only with fish fed the control diet. The histological organization of the liver in totoaba juveniles fed RD, SPC15, SPC30 and SPC45 diets were similar. Totoaba fed with SPC90 and SPC100 showed histological alterations in hepatic and pancreatic parenchyma. Overall, according to the findings in this study, 45% of dietary FM could be replaced by SPC without causing adverse changes in metabolism, histological organization of liver, and health of juveniles of totoaba when cultured for 60 days. However, levels greater than 60% of SPC could compromise the health status of fish.

Revista: ZOO BIOLOGY , Volumen: 40, Número: 4, ISSN: Electronic ISSN: 1098-2361, DOI: 10.1002/zoo.21604

Título del Artículo: Population genetics of wild and captive Trachemysvenusta (Gray, 1856) (Reptilia: Emydidae) in the Usumacinta river basin in Mexico

Autores e instituciones de adscripción: Jorge Hernández-García [1] Carlos Pedraza-Lara [2] Judith A. Rangel Mendoza [1] Claudia Elena Zenteno-Ruiz [1]

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Resumen:

The Mesoamerican slider Trachemysvenusta is endemic to Central America and Southern Mexico. Several human-mediated disturbances, including habitat degradation and illegal hunting for food, have impacted its populations along the Usumacinta river basin. The extent to which these disturbances have affected the genetic diversity and population structure of T. venusta inhabiting the basin remains unresolved. To this end, we analyzed eight microsatellite markers in five wild populations of T. venusta from the middle and lower reaches of the basin as well as one captive population. Our results show high levels of genetic diversity for all analyzed populations, low F ST values, high gene flow and no genetic structure, indicating an absence of genetic differentiation across sites and, thus, a single panmictic population for the basin. Evidence of a genetic bottleneck was observed in two of the wild populations (and the captive one), indicating some impact from disturbances, whether from poaching or habitat fragmentation, despite the seemingly high connectivity of most populations. Results are discussed in terms of the relative importance of genetic parameters for the conservation of T. venusta, particularly in light of the importance of demographic stochasticity in local conditions undergoing rapid changes.

Revista: LATIN AMERICAN JOURNAL OF AQUATIC RESEARCH, Volumen: 49, Número: 4 , ISSN: Electronic ISSN: 0718-560X, DOI: 10.3856/vol49-issue4-fulltext-2639

Título del Artículo: Persistent organic pollutants (POPs) in fish from two coastal lagoons of the central Mexican Pacific

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Resumen:

Mexico has a great variety of aquatic ecosystems; however, most of them present significant contamination levels. Despite the efforts to monitor toxic and bioaccumulative persistent pollutants, they are still insufficient and outdated data from Mexican coasts, especially in polychlorinated biphenyls (PCBs) and polyaromatic hydrocarbons (PAHs), due to the number of aquatic bodies that have received little or no attention. In this regard, the Mexican Pacific's coastal zones and their aquatic ecosystems monitoring PCBs and PAHs in biota is critical because it allows us to estimate the potential risk to human health. This work aimed to determine the total concentration of polychlorinated biphenyls (∑PCBs) and total polyaromatic hydrocarbons (∑PAHs) in the muscle of fish collected in two coastal lagoons of the central Mexican Pacific and to determine the noncarcinogenic risk ratio (HQ) based on the monthly per capita consumption of national fish and the consumption of fish associated with fishing communities in Mexico. It was found that the potential risk for fishing communities is considerably higher and correlates to the rate of fish consumption, highlighting their vulnerability to these contaminants

Revista: JOURNAL OF BUILDING ENGINEERING, Volumen: 40, Número: N/A, ISSN: 2352-7102, DOI: 10.1016/j.jobe.2021.102676

Título del Artículo: Performance assessment of different measured variables from onboard monitoring system to obtain the occupancy patterns of rooms in an office building

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Resumen:

Considering the occupant behaviour as one of the most relevant matters that have an influence in the energy performance of buildings and also, one of the most relevant sources of the performance gap, the research work reported in this paper is focused on measuring the occupancy patterns as a variable that could contribute to overcome these problems. An in-depth work that analyses the suitability of different variables to obtain the occupancy patterns from measurements recorded by on-board monitoring systems is described. The indoor air temperature, the relative humidity, the CO2 concentration and the total electricity consumption measurements have been evaluated as occupancy indicators. The proposed approach has been applied to three rooms of an in-use office building. Said offices have different levels of occupancy and users with different habits. The study is based on selecting 32 months with four winters and four summers from a monitoring campaign from June 2013 to March 2019. The work schedule for the employees has been used as a reference to validate the results. This research demonstrates the capability to obtain occupancy patterns from measuring of the CO2 concentration and the total electricity consumption. The deviation between the occupancy patterns obtained from these variables and the reference schedule is under 10%, and it is lower for the rooms with larger occupancy rates. The proposed approach to obtain the occupancy patterns, together with new, smart and digitalised technologies, can contribute to ca-

Revista: LATIN AMERICAN JOURNAL OF AQUATIC RESEARCH, Volumen: 49, Número: 3, ISSN: Electronic Electronic ISSN: 0718-560X, DOI: 10.3856/vol49-issue3-fulltext-2624

Título del Artículo: Partial characterization of digestive proteases in Pacific red snapper Lutjanus peru Nichols & Murphy, 1922 (Perciformes: Lutjanidae)

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Resumen:

Pacific red snapper (Lutjanus peru) is an important commercial species in Mexico with great aquaculture potential; however, digestive physiology is still unknown. Therefore, the objective of the present work was to characterize the digestive proteases of L. peru juvenile using biochemical and electrophoretic techniques. Results showed a higher acid protease activity than the alkaline proteases, trypsin, chymotrypsin, and leucine aminopeptidase (LAP). The optimum temperature for acid proteases was between 30 to 40°C. Trypsin activity showed two maximum peaks of temperature (30 and 50°C), while alkaline proteases, chymotrypsin, and LAP had optimum temperatures of 50, 50 to 60, and 40°C, respectively. Moreover, the optimum pH of acid proteases was between 2 and 3. Also, alkaline proteases, trypsin, chymotrypsin showed pH optimums at pH 6, 9, and 5, respectively, although LAP showed two optimum pH values at 6 and 9. Acid protease zymogram showed three isoforms, totally inhibited by pepstatin A. Alkaline protease zymogram revealed six bands (125.4, 67.2, 57.9, 48.6, 29.8, and 26.9 kDa), which were inhibited by specific serine-proteases and metalloproteases inhibitors. In conclusion, the main digestion in L. peru depends on stomach proteases, which are characteristic of carnivorous fish, followed by intestinal digestion supported mainly by chymotrypsin.

Revista: MOLECULAR ECOLOGY, Volumen: N/A, Número: N/A, ISSN: Electronic ISSN: 2076-3417, DOI:10.3390/app11167616

Título del Artículo: Experimental Evaluation and Theoretical Optimization of an Indirect Solar Dryer with Forced Ventilation under Tropical Climate by an Inverse Artificial Neural Network

Autores e instituciones de adscripción: Gregory L. Owens [1],Thor Veen [2],Dylan R. Moxley [3],Lenin Arias-Rodriguez [4],Michael Tobler [5] ,Diana J. Rennison [6]

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Resumen:

Visual sensitivity and body pigmentation are often shaped by both natural selection from the environment and sexual selection from mate choice. One way of quantifying the impact of the environment is by measuring how traits have changed after colonization of a novel habitat. To do this, we studied Poecilia mexicana populations that have repeatedly adapted to extreme sulphidic (H2S-containing) environments. We measured visual sensitivity using opsin gene expression, as well as body pigmentation, for populations in four independent drainages. Both visual sensitivity and body pigmentation showed significant parallel shifts towards greater medium-wavelength sensitivity and reflectance in sulphidic populations. Altogether we found that sulphidic habitats select for differences in visual sensitivity and pigmentation. Shifts between habitats may be due to both differences in the water's spectral properties and correlated ecological changes.

Revista: REVISTA UNIVERSIDAD Y SOCIEDAD, Volumen: 13, Número: N/A, ISSN: Print ISSN: 2415-2897 Electronic ISSN: 2218-3620, DOI: N/A

Título del Artículo: Prescriptive assessment of the first level of medical care

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Resumen:
One of the challenges that governments and health systems have in the world to guarantee access to generic (GM) medicines is their acceptance and use by health personnel and the population, therefore, research on this issue is of great relevance. The objective of the article is to analyze the prescriptive assessment of doctors of the first level of care towards GM. Among the methods used is the qualitative phenomenological study, carried out with two focus groups. The sample was made up of twelve doctors who work in the first level of care in the Health Sector. Data processing was carried out in the MAXQDA program (version 2018.2). Experts participated during the process to validate the study. As a result it was obtained that the age range of the informants was from 29 to 62 years of age, most of them were specialists in family medicine who work under care pressure. The main advantage they identify in the MG is the low cost, however, ignorance and distrust still prevail about its effectiveness. As part of the Conclusions, it can be stated that the prescriptive assessment of first-level care physicians is influenced by their preference for the original medications. The investment made by laboratories and the spon-sorship of pharmaceutical industries for profit defines their decision-making in prescribing

Revista: CADERNO PROFISSIONAL DE MARKETING UNIMEP, Volumen: 9, Número: 2 , ISSN: 2317-6466, DOI: N/A

Título del Artículo: Pozol, an ancestral mexican drink: a cultural marketing approach

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Resumen:
In the gastronomic sector, culture and marketing are a relevant duality to preserve values and customs, as is the case with Mexican ancestral drinks made from corn and cocoa. The objective of this article was to know the perception of Tabasco consumers about their distinctive drink: the pozol. The research was qualitative with a systemic phenomenological approach. The main findings show the level of roots of this drink in the population of Tabasco, its consumption, product diversification and benchmark taste with other drinks.

Revista: 3C TECNOLOGIA, Volumen: 10, Número: 1, ISSN: 2254 – 4143, DOI: 10.17993/3ctecno/2021.v10n1e37.17-31

Título del Artículo: Notes on photovoltaic energy in Mexico

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Resumen:
Faced with a situation of global crisis in environmental matters, the mechanisms to ensure the right to a healthy and ecologically balanced environment is a constant task, seen from a multidisciplinary and interdisciplinary, transversal and comprehensive process. The state of risk and vulnerability of the living being has encouraged from the various sciences and disciplines to address emerging and conjunctural issues such as the environment. Derived from this, this document aims to provide a description of notes regarding photovoltaic energy in the Mexican state as a renewable energy mechanism. The photovoltaic energy system collaborates with the care of the environment, acquiring a substantial value in the economic and social sectors as an appropriation system that results in greater use advantages. The range of renewable energy in the Mexican state from the energy reform considers the presence of private electricity providers; as well as granting citizens, the public and private sectors a range of choice to provide themselves with energy, reduction of carbon emission and energy efficiency, all of the above, even though their assurance mechanisms must be strengthened. To understand the approach to this issue, a qualitative methodology with a documentary scope and an explanatory and axiological approach was used.

Revista: METABOLIC BRAIN DISEASE, Volumen: 36, Número: 8, ISSN: Print ISSN: 0885-7490 Electronic ISSN: 1573-7365, DOI: 10.1007/s11011-021-00836-y

Título del Artículo: Oxytocin levels in individuals with schizophrenia are high in cerebrospinal fluid but low in serum: A systematic review and meta-analysis Oxytocin and Schizophrenia

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Resumen:
Schizophrenia is a debilitating mental illness. Levels of oxytocin have been proposed as a biomarker of schizophrenia; however, the observed levels of oxytocin in individuals with schizophrenia have been inconsistent across studies. We performed a meta-analysis to evaluate oxytocin levels in plasma, serum and cerebrospinal fluid to see if there are statistically different concentrations between individuals with schizophrenia and the comparison group. The meta-analysis followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. Following the inclusion and exclusion criteria, 14 studies were included in the meta-analysis. The quality of the study was evaluated by the Newcastle-Ottawa Scale (NOS). A random-effects model was performed using the Comprehensive Meta-analysis software with the standardized mean difference (SMD) and 95% confidence intervals (CIs). Serum oxytocin levels in individuals with schizophrenia were significantly lower than that in comparison group (SMD = - 1.74, 95% CI = - 3.22 to - 0.26, p = 0.02) but cerebrospinal fluid oxytocin levels in individuals with schizophrenia were significantly higher than those in the comparison group (SMD = 0.55, 95% CI = 0.05 to 1.04, p = 0.03). Our results suggest that oxytocin levels in cerebrospinal fluid are increased in individuals with schizophrenia but decreased in serum. Therefore, the oxytocin system dysregulation may play a role in the pathophysiology of schizophrenia and it should be measured in more populations for a possible implementation as a biomarker of schizophrenia.

Revista: REVISTA CUIDARTE, Volumen: 12, Número: 1, ISSN: Print ISSN: 2216-0973 Electronic ISSN: 2346-3414, DOI: 10.15649/cuidarte.1081

Título del Artículo: Nursing Staff Attitudes Towards Patients' Death

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Resumen:
Introducción: El proceso de morir se ha desplazado a lo largo de la historia desde la familia y el hogar hasta los profesionales de salud y los hospitales. Cuidar demanda actitudes, conocimientos y destrezas que se deben adquirir y perfeccionarse durante la formación disciplinar. Objetivo: Explorar las actitudes que muestra el personal de enfermería que labora en áreas hospitalarias críticas ante el proceso de la muerte de pacientes. Materiales y métodos: Estudio descriptivo de corte transversal, bajo un muestreo no probabilístico por conveniencia se obtuvo una muestra final de 71 enfermeras profesionales que laboran en áreas críticas de dos hospitales de alta especialidad en Tabasco, México. El instrumento utilizado fue "Actitudes ante la muerte" (CAM-2), traducido del original de Martin y Salovely. Resultados: Los profesionales de enfermería que participaron en el estudio tienen una edad promedio de 32.5 años (DE=7), donde el 71.8% de los participantes pertenecen al sexo femenino. El 67.6% del personal de enfermería muestra una actitud de indiferencia ante la muerte, solo un 9.9% muestra una actitud positiva. Con relación a la perspectiva de actitud de temor el 46.5% manifiesta que pensar en la muerte les genera ansiedad, mientras que el 39.4% ve la muerte de los pacientes como algo natural. Conclusiones: El personal de enfermería posee sentimientos de indiferencia ante el cuidado del paciente ante la muerte, sin embargo, consideran que aceptar su propia muerte los lleva a cuidar con más libertad

Revista: CUREUS, Volumen: 13, Número: 11, ISSN: 2168-8184,. DOI: 10.7759/cureus.19449

Título del Artículo: Myopericarditis as a Manifestation of Long COVID Syndrome

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Resumen:
The main presentation of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection is respiratory. However, there are extrapulmonary manifestations such as myocardial and pericardial injury. The term long COVID syndrome describes the persistence of symptoms in patients who have recovered from the infection. A 31-year-old man presented with mild coronavirus disease 2019 (COVID-19) symptoms for three days. Two weeks later, he developed chest pain, pericardial rub, and pericardial effusion; he underwent echocardiography showing pericarditis and an MRI which revealed inferoseptal hypokinesia and mild global myocardial hyperintensity, cardiac scintigraphy with Ga-67, and an inflammatory process in the myocardium. He was treated with methylprednisolone pulse (1g IV/day) and tapering prednisone (5 mg/day), with gradual evolution of symptoms for one year. In conclusion, this is a patient without comorbidities with clinical, laboratory, and imaging diagnosis of myopericarditis as a manifestation of long COVID syndrome.

Revista: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH, Volumen: N/A, Número: N/A, ISSN: Electronic ISSN: 1614-7499, DOI:10.1007/s11356-021-17208-9

Título del Artículo: Morphological and cardiac alterations after crude oil exposure in the early-life stages of the tropical gar (Atractosteus tropicus)

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Resumen:
Fish development can be affected by environmental pollutants such as crude oil (anthropogenic or natural sources), causing alterations especially in cardiac function and morphology. Most such studies have focused on saltwater species, whereas studies in freshwater fishes are scant. The objective of the current study was to evaluate the effects of crude oil exposure (as 0, 5, 10, 15, or 20% high-energy water accommodated fractions, HEWAF) on cardiac function and edema formation during two early periods of development (embryo and eleuteroembryo, 48 h each) individually using the tropical gar Atractosteus tropicus as a model. Embryos did not exhibit alterations in body mass, total length, condition factor, and cardiac function as a function of oil. In contrast, eleuteroembryos proved to be more sensitive and exhibited increased body mass, total length, and condition factor, decreased heart rate and phenotypic alterations such as cardiac dysmorphia (tubular hearts) and spine curvature at high concentrations of HEWAF. Moreover, edema formation was observed in both stages This study shows different functional responses of A. tropicus after crude oil exposure and provides useful information of the developmental impacts of these compounds on the early life stages of freshwater tropical fishes.

Revista: SCIENCE OF THE TOTAL ENVIRONMENT, Volumen: 753, Número: N/A, ISSN: 0048-9697,. DOI: 10.1016/j.scitotenv.2020.141915

Título del Artículo: The urban contrast: A nationwide assessment of avian diversity in Mexican cities

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Resumen:

In this study we focused on urban bird diversity across Mexico, a megadiverse country, with a special focus on the relative role of urban greenspaces and heavily-built sites. We considered a country-wide approach, including 24 different sized Mexican cities. Our aims were to describe the urban bird diversity in focal cities and further assess the relationships between it and the biogeographic region where cities are located, their size, elevation, and annual rainfall. Additionally, we evaluated differences in the functional composition of bird communities in both studied urban scenarios (i.e., urban greenspaces, heavily-built sites). Our results confirm that urban greenspaces are home to a large proportion of species when contrasted with heavily-built sites. While total species richness and species richness of greenspaces were related with the cities' biogeographic region –with higher species richness in the Neotropical region and Transition Zone–, the relationship did not hold true in heavily-built sites. We found that annual rainfall was negatively related to bird richness in heavily-built sites, suggesting that species from arid systems can be more tolerant to urbanization. Regarding the bird functional group assessment, results show a clear differentiation between the functional groups of greenspaces and those of heavily-built sites, with granivores and omnivores associated with the latter and a highly diverse array of functional groups associated with urban greenspaces.

Revista: CANADIAN JOURNAL OF PLANT PATHOLOGY, Volumen: 43, Número: 5, ISSN: Print ISSN: 07060661 Electronic ISSN: 17152992, DOI:10.1080/07060661.2020.1870003

Título del Artículo: Morphological and molecular identification of Phytophthora tropicalis causing black pod rot in Mexico

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Resumen:

Theobroma cacao L. is cultivated in Mexico, primarily in Tabasco, a southern state where the climatic conditions are suitable for producing cacao, the source of chocolate. However, these conditions are also suitable for cacao pathogens such as Phytophthora spp., the causative agents of black pod rot, a disease that is difficult to eradicate once established. In this study, we collected cacao pods exhibiting the symptoms and signs of black pod rot from different locations in Tabasco. Several recovered isolates exhibited the typical colony morphology of Phytophthora, including a white mycelium, stellate with chrysanthemum shape and appressed appearance with slightly torulose hyphae. Both sporangia and chlamydospores were absent in culture media, but were observed after induction in a sterile soil solution. Sporangia were papillated, and the sporangial shapes were globose, ellipsoid, and obturbinate, while the sporangiospores were umbrella shaped and simple sympodial. Chlamydospores were spherical, terminal, and subterminal. The concatenated analysis of the internal transcribed spacer region (ITS1-5.8S-ITS2 = ITS), the cytochrome c oxidase subunit II (COXII), the translation elongation factor 1α (TEF1) and α-tubulin (BT) placed strain PtCa-14 among several P. tropicalis strains, confirming the identity of this species. The pathogenicity tests on pear and peach fruit and cacao pods showed the ability of this oomycete to induce rot. Taken together, these results indicated the presence of P. tropicalis in the Mexican state of Tabasco and demonstrated its ability to cause black pod rot.

Revista: REUMATOLOGÍA CLÍNICA, Volumen: 17, Número: 14, ISSN: 1699-258X, DOI: 10.1016/j.reuma.2019.04.002
Título del Artículo: Update of the Mexican College of Rheumatology Guidelines for the Pharmacological Treatment of Rheumatoid Arthritis, 2018

Autores e instituciones de adscripción: Mario H Cardiel [1], Sandra Carrillo [2], Marcela Pérez [3], Lilia Andrade [4], César Pacheco Tena [5], Luis H Silveira [6], Leonardo Limón [6], Sergio Cerpa [7], Sergio Gutiérrez Ureña [9], Sergio Durán [10], Fedra Irazoque Palazuelos [4], Sandra Muñoz López [4], Sandra Araceli Sicsik Ayala [11], Leonor Barile [12], María Azucena Ramos Sánchez [13], Daniel Grajeda Portes [13], Margarita Portela [14], Alina Hernández Bedolla [14], José Luis García-Figueroa [15], Mauricio Montero [16], Carlos Abud-Mendoza [17], Marco Ulises Martínez Martínez [17], David Herrera van Ostdam [17], Virginia Pascual-Ramos [18], Javier Merayo-Chalico [18], Istar Guzmán-Sánchez [19], María Esther Pérez-Bastidas [20], Jorge Enrique Aguilar Arreola [21], Alejandra López Rodríguez [22], Greta Reyes-Cordero [23], Humberto Alfredo Ricardez [24], María Fernanda Hernández Cabrera [25], Guadalupe Olvera-Soto [26], Daniel Xibillé Friedmann [27]

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Resumen:

Therapeutic advances in rheumatoid arthritis require periodic review of treatment guidelines.

Objective: To update the Mexican College of Rheumatology guidelines on the pharmacological treatment of rheumatoid arthritis.

Method: Board certified rheumatologists from different health institutions and regions of the country participated. Work teams were formed that reviewed the previous guidelines, elaborated new questions, reviewed the literature, and scored the evidence that was presented and discussed in plenary session.

The conclusions were presented to infectologists, gynaecologists and patients. Recommendations were based on levels of evidence according to GRADE methodology.

Results: Updated recommendations on the use of available medications for rheumatoid arthritis treatment in Mexico up to 2017 are presented. The importance of adequate and sustained control of the disease is emphasised and relevant safety aspects are described. Bioethical conflicts are included, and government action is invited to strengthen correct treatment of the disease.

Conclusions: The updated recommendations of the Mexican College of Rheumatology on the pharmacological treatment of rheumatoid arthritis incorporate the best available information to be used in the Mexican health care system

Revista: CHELONIAN CONSERVATION AND BIOLOGY, Volumen: 20, Número: 1, ISSN: 1071-8443, DOI: 10.2744/CCB-1387.1
Título del Artículo: Mitochondrial DNA Data Support the Recognition of the Mud Turtle, Kinosternon vogti *(Cryptodira: Kinosternidae)*

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Resumen:

The Vallarta Mud Turtle (Kinosternon vogti) was recently described based solely on morphological characters; therefore, an examination of molecular data to determine the validity of this species is warranted. Here, mtDNA barcodes, phylogenetic trees, and three Operational Taxonomic Unit (OTU) analyses offer new evidence to support K. vogti as a distinct lineage within the Kinosternon complex. We generated 1,237 base pairs of the mitochondrial cytochrome oxidase I and cytochrome b genes from two paratype specimens collected at the species' type locality in Puerto Vallarta, Jalisco, Mexico, and compared them with 20 other sequences from BLAST belonging to close relatives representing 16 species. From these sequence data, we estimated genetic p-distances, reconstructed phylogenetic relationships among taxa, and performed 3 different operational taxonomic unit analyses (CD-HIT-EST DNA, ABGD, and Bayesian Poisson Tree Processes). The mean genetic p-distances over all sequence pairs was 0.083 ± 0.00 substitutions per site, with the average number of base pair differences per site between K. vogti and all remaining sequences being 0.083 ± 0.009. The closest species to K. vogti were K. hirtipes (p-distances 0.057 ± 0.00) and K. scorpioides (p-distances 0.058 ± 0.00). Phylogenetic trees from maximum likelihood and Bayesian analyses of the concatenated data set showed the same topology with generally high node support. The 3 operational taxonomic unit analyses identified K. vogti as a distinct OTU and likely a distinct evolutionary lineage.

Revista: PEERJ, Volumen: 9, Número: N/A, ISSN: Electronic ISSN: 2167-8359, DOI: 10.7717/peerj.12200
Título del Artículo: Microbial growth in biobeds for treatment of residual pesticide in banana plantations
Autores e instituciones de adscripción: Verónica I. Domínguez-Rodríguez [1], Eduardo Baltierra-Trejo[1,2], Rodolfo Gómez-Cruz[1], Randy H. Adams[1]
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Resumen:
High doses of ethylenebisdithiocarbamate (EBDC) are used in banana production, and unused pesticide mixture (solution) is often disposed of improperly. This can result in soil and water contamination and present an undue risk to rural communities and the environment. An alternative to reduce the environmental impacts caused by pesticide residues is the biobeds treatment. It is necessary to establish if the composition of the proposed biomixtures supports microbial activity to degrade pesticides in biobeds. This research aimed to evaluate the EBDC effect on the distribution and abundance of microbial populations in polluted biomixtures.
Methods
For this purpose, a biomixture based on banana stem, mulch, and Fluvisol soil (50:25:25% v/v) was prepared and polluted with 1,000 mg L–1 EBDC. The response variables kinetics were determined every 14 days for three months, such as pH, organic matter, moisture, cation exchange capacity, microbial colonies, and cell counts at three depths within the experimental units.

Revista: REVISTA DE GEOGRAFÍA NORTE GRANDE, Volumen: N/A, Número: 79, ISSN: Electronic: 0718-3402 DOI: http://dx.doi.org/10.4067/S0718-34022021000200207
Título del Artículo: Methodology for estimating economic losses of corn crops damaged by floods using remote sensing
Autores e instituciones de adscripción: Rogelio Baltazar Ascención [1], Carlos Alberto Mastachi-Loza [2], Adalberto Galindo Alcántara [3] , Marivel Hernández Téllez[4] , Rocio Becerril-Piña[5]
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Resumen:
The flooded areas of corn cultivation were determined by means of satellite images in order to know the economic losses due to floods. As a case study, a flood that occurred in 2016 that affected 4 municipalities in the State of Tabasco, Mexico, was analyzed. The methodology included the use of Landsat satellite images (L8), calculation of spectral indices (water, vegetation and humidity), identification of corn growing areas through supervised classification and the estimation of economic losses. The results show that the spectral indices that best managed to identify the flooded areas were: MNDWI and NDWI. To report damages, values in USD (US dollars) were standardized in 2016 prices using exchange rates adjusted for purchasing power parity (PPP). For the case study, the results of damages per hectare were established between 728.57 USD / ha in PPP and 317.25 USD / ha in PPP, which agree with the estimates made in other countries for corn crops.

Revista: FRONTIERS IN PUBLIC HEALTH, Volumen: 9, Número: N/A, ISSN: ISSN Electronic ISSN: 2296-2565, DOI: 10.3389/fpubh.2021.703450
Título del Artículo: Mental Health Problems Due to Social Isolation During the COVID-19 Pandemic in a Mexican Population
Autores e instituciones de adscripción: Alma Delia Genis-Mendoza [1 2], José Jaime Martínez-Magaña [2], María Lilia López-Narváez [3], Thelma Beatriz González-Castro [4], Isela Esther Juárez-Rojop [5], Humberto Nicolini [2], Carlos Alfonso Tovilla-Zárate [6], Rosa Giannina Castillo-Avila [5]
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Resumen:
Introduction: Social isolation due to the COVID-19 pandemic has been identified as a risk factor of several mental disorders. Therefore, the present work aimed to evaluate the effect of social isolation experienced during the COVID-19 pandemic on the mental health of a Mexican population. Materials and Methods: A cross-sectional online survey was conducted in individuals of 18 years of age and over. The questioner was structured to identify onset or worsening of psychiatric symptoms due to social isolation by COVID-19. The survey included changes in eating habits, changes in personal hygiene habits, the starting the use or increased the use of psychoactive substances, symptoms of depression or post-traumatic stress. Results: A total of 1,011 individuals were included in the analysis. The majority were women (68.84%). Changes in eating habits were reported in 38.51% of the participants, 67.80% reported having their physical self-perception distorted or having started a low-calorie diet. Regarding symptoms of depression, 46.10% participants indicated to have at least one depressive symptom, and 4.46% reported suicidal ideation during social isolation. Interestingly, 6.09% of individuals reported that they used to have depressive symptoms prior the COVID-19 pandemic and those symptoms decreased due to social isolation. Additionally, 2.27% of individuals presented symptoms of post-traumatic stress due to the possibility of getting COVID-19. Conclusions: In this work we identified how social isolation has impacted the mental health of the Mexican population. We observed that practically all the symptoms evaluated were affected during isolation, such as personal hygiene and eating habits. Depression and suicidal ideation were the ones that increased the most in the general population, while in individuals who had symptoms of depression before isolation, these symptoms decreased during social isolation.

Revista: CHEMISTRY & BIODIVERSITY, Volumen: 18, Número: 4, ISSN: Electronic ISSN: 1612-1880, DOI: 10.1002/cbdv.202000820

Título del Artículo: Metabolic Profiling of Vasorelaxant Extract from Malvaviscus arboreus by LC/QTOF-MS

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Resumen:
We aimed to develop a standardized methodology to determine the metabolic profile of organic extracts from Malvaviscus arboreus Cav. (Malvaceae), a Mexican plant used in traditional medicine for the treatment of hypertension and other illnesses. Also, we determined the vasorelaxant activity of these extracts by ex vivo rat thoracic aorta assay. Organic extracts of stems and leaves were prepared by a comprehensive maceration process. The vasorelaxant activity was determined by measuring the relaxant capability of the extract to decrease a contraction induced by noradrenaline (0.1 μM). The hexane extract induced a significant vasorelaxant effect in a concentration- and endothelium-dependent manner. Secondary metabolites, such as polyunsaturated fatty acids, terpenes and one flavonoid, were annotated by liquid chromatography/quadrupole time-of-flight mass spectrometry (LC/QTOF-MS) in positive ion mode. This exploratory study allowed us to identify bioactive secondary metabolites from Malvaviscus arboreus, as well as identify potentially-new vasorelaxant molecules and scaffolds for drug discovery.

Revista:REVISTA DE INVESTIGACIONES-UNIVERSIDAD DEL QUINDIO, Volumen: 33, Número: 1, ISSN: Electronic ISSN: 2500-5782 Print ISSN: 1794-631x, DOI: 10.33975/riuq.vol33n1.446

Título del Artículo: Multimedia platform design for the development of intercultural compentece as an internationalization strategy in organizations

Autores e instituciones de adscripción: Marcos Pérez-Mendoza[1], María Cruz Cuevas-Alvarez[1], Gerardo Ulises Arias-Moguel[1
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Resumen:
Objetivo: El objetivo del presente trabajo de investigación es diseñar un sistema multimedia para el desarrollo de la competencia intercultural en miembros inmersos en equipos multiculturales dentro de las organizaciones.
Material y método: Este trabajo cuantitativo, de tipo descriptivo y de diseño transversal se llevó a cabo con la administración de una encuesta a 100 profesores pertenecientes a una institución de educación superior mexicana, quienes además de trabajar o haber trabajado en empresas internacionales cuentan con una formación intercultural.
Resultados: Los datos presentan elementos correspondientes a las tres dimensiones del constructo Competencia Intercultural en los profesores participantes. Este grupo inició su formación de manera virtual la cual reforzaron con exposición a otras culturas de manera presencial.
Discusión: Para determinar la efectividad de la plataforma, se requiere de tres fases adicionales: la implementación de la plataforma, seguido por una adecuación a partir de los comentarios de los usuarios y la fase de evaluación de los elementos de la plataforma, así como el desarrollo de la Competencia Intercultural en los usuarios de ésta.
Conclusiones: La competencia intercultural permite la minimización o inexistencia de diferencias culturales, la cual podría incrementarse debido al distanciamiento social derivado de la pandemia (SARS COVID19) considerando que la exposición a otras culturas de manera presencial no es posible en la actualidad

Revista: REVISTA CAHIERS AGRICULTURES, Volumen: 30, Número: N/A, ISSN: Print ISSN: 1166-7699 Electronic ISSN: 1777-5949, DOI:10.1051/cagri/2021033

Título del Artículo: Impacts of oil palm cultivation on soil organic carbon stocks in Mexico: evidence from plantations in Tabasco State

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Resumen:
There is a need for more studies on the effects of oil palm plantations on soil organic carbon storage and on the environmental services provided by these agrosystems in Mexico. This study focused on estimating the soil organic carbon stocks in three areas within oil palm plantations (palm circle, under the frond and between palm rows), at three soil depths (20, 40 and 60 cm) and comparing the carbon storage between different land-uses: a 20-year-old pasture (GS20), a 20-year-old oil palm plantation (OP20), and a secondary forest (SF20). Our results suggest that oil palm plantations store soil organic carbon mainly under frond areas when sown in lixisols and luvisols, with lower carbon sequestration in the palm circle. Regarding the soil depth, the estimated carbon storage was 87 Mg C ha–1 and 67 Mg C ha–1 at depths of 20 and 60 cm, respectively. Regarding land-use comparison, results indicate an increase (not statistically significant) in carbon storage to 27% at 20 cm depth and 18% at 60 cm between pasture and palm plantation. The second-growth forest presented higher carbon storage compared to both other land uses.

Revista: CIRUGIA Y CIRUJANOS, Volumen: 89, Número: 6, ISSN: Electronic ISSN: 2444-054 Print ISSN: 0009-7411, DOI: 10.24875/CIRU.20001027

Título del Artículo: Longitudinal magnetic resonance evaluation of the schizophrenia model of neonatal lesion in the ventral hippocampus

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Resumen:
Objective: To evaluate the progression by means of nuclear magnetic resonance of the lesion in the schizophrenia model of lesion of the ventral hippocampal nucleus (LVNH).
Method: Magnetic resonance imaging (MRI) were performed in male Wistar rats, from 8 days postnatal to 139 days, in animals with LNHV and without lesion (sham). The MRI were carried out on a Variant 7 T equipment. The data were analyzed with the Amira software, for a voxel-based morphometric analysis.
Results: We observed the presence of hypersignals with a significant enhancement in the structures analyzed in the group with LVNH, and greater volume in the lateral ventricles, presenting a larger size of the lesion on day PD96 and significantly reducing on day PD139.
Conclusions: We found a cell rearrangement during the progression of the lesion, which could be the effect of the activation of immune cells.

Revista: CRITICAL REVIEWS IN SOLID STATE AND MATERIALS SCIENCES, Volumen: 47, Número: 3, ISSN: Print ISSN: 1040-8436 Electronic ISSN:1547-6561, DOI: 10.1080/10408436.2021.1886048

Título del Artículo: Layered materials and their heterojunctions for supercapacitor applications: a review

Autores e instituciones de adscripción: Aída Tathagata Kar[1], Srinivas Godavarthi[2], Shaik Khadheer Pasha[3], Kalim Deshmukh[4], Lorenzo Martínez-Gómez[1],Mohan Kumar Kesarla[1]
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Resumen:
Supercapacitors have recently emerged as a potential technology with superior charge storage capacity and power density. Layered materials, by the virtue of their morphology and high surface area, are deemed to be potential candidates for storing charge or energy. In this review, the supercapacitive properties and electrochemical stability of different layered materials (MnO2, graphene, g-C3N4, MoS2, and MXenes) in a wide range of electrolytes is discussed. Moreover, an overview of the heterojunctions or composites of these 2D materials is included, emphasizing their synergistic effect towards improved supercapacitive performance and cyclic stability. Most importantly, the capacitive behavior dependence on the working electrode morphology, crystal structure, and type of electrolyte is explained. A future perspective on the design and use of these layered materials and their heterojunctions for commercial applications is presented.

Revista: BRAZILIAN JOURNAL OF CHEMICAL ENGINEERING, Volumen: 38, Número: 4, ISSN: Electronic ISSN: 1678-4383, DOI: 10.1007/s43153-021-00175-6

Título del Artículo: Implementing genetic algorithms for optimizing integrated oil production systems

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Resumen:
This paper presents an optimization model based on an oil production system. The objective function is the Net Present Value (NPV) of the profits from hydrocarbon sales, considering the operation costs. The economic objective function is subject to constraints on the reservoir, fluid properties, and multiphase flow in the well. The main variables within the model are the well diameter, reservoir skin factor, rock permeability and gas–oil ratio. This work is presented as an optimization model, because traditionally the production system models are solved by simulation, not ensuring the optimal system solution. Genetic Algorithms are implemented for solving the optimization model because they solve problems with non-convex terms. To obtain the results, the mathematical model was coded in Matlab and was solved with the Genetic Algorithms optimization tool implemented in the software. Four case studies were analyzed. The results indicate that there is an economic improvement in the profits from the sale of hydrocarbon, compared to the solution of the traditional technique by means of Nodal Analysis.

Revista: ENGINEERING, MULTIDISCIPLINARY, Volumen: N/A, Número: 25, ISSN: Print ISSN: 1390-650X Electronic ISSN: 1390-860X, DOI: 10.17163/ings.n25.2021.02

Título del Artículo: Impact of oversampling algorithms in the classification of guillain-barre syndrome main subtypes

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Resumen:
Guillain-Barré Syndrome (GBS) is a neurological disorder where the body's immune system attacks the peripheral nervous system. This disease evolves rapidly and is the most frequent cause of paralysis of the body. There are four variants of GBS: Acute Inflammatory Demyelinating Polyneuropathy, Acute Motor Axonal Neuropathy, Acute Sensory Axial Neuropathy, and Miller-Fisher Syndrome. Identifying the GBS subtype that the patient has is decisive because the treatment is different for each subtype. The objective of this study was to determine which oversampling algorithm improves classifier performance. In addition, to determine whether balancing the data improves the performance of the predictive models. Three oversampling methods (ROS, SMOTE, and ADASYN) were applied to the minority class. Three classifiers (C4.5, SVM and JRip) were used. The performance of the models was obtained using the ROC curve. Results show that balancing the dataset improves the performance of the predictive models. The SMOTE Algorithm was the best balancing method, in combination with the classifier JRip for OVO and the classifier C4.5 for OVA.

Revista: JOURNAL OF ALLOYS AND COMPOUNDS, Volumen: 878, Número: N/A, ISSN: Electronic: Electronic ISSN: 0925-8388,DOI:10.1016/j.jallcom.2021.160356

Título del Artículo: High non-linear electrical properties of Li3xCo7-4xSb2+xO12 a new ceramic varistor

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Resumen:

In this work, a new varistor with a high non-linear J-E electrical characteristic (= 54; EB = 9753 V/cm) is reported, synthesized from the binary system Co7Sb2O12-LiCoSbO4 with general formula Li3xCo7–4xSb2+xO12. This new material is a single-phase iso-structural to Co7Sb2O12 spinel. It was shown that the electrical properties improved with increasing the x value in the solid solution. Li3xCo7–4xSb2+xO12 varistor behaviour is explained by the presence of defects in the crystal structure of Co7Sb2O12 when Li+ and Sb5+ are added, which appears to be responsible for the formation of Schottky type potential barriers at the grain boundaries. Also, it is reported the effect of the sintering temperature on the electrical properties of the varistors. In addition, sub-solidus compatibility relations on the ternary system of Li2O-CoO-Sb2O5, up to>50% Li2O, and the binary phase diagram Co7Sb2O12-LiCoSbO4 have been determined, where an extensive solid solution Li3xCo7–4xSb2+xO12: 0.2 ≤ x ≤ 0.7, was formed. The lattice parameter of Li3xCo7–4xSb2+xO12 solid solution exhibit a discontinuity indicating a change in the substitution mechanism or symmetry of the solid solution. XPS analysis showed

Revista: LATIN AMERICAN JOURNAL OF AQUATIC RESEARCH, Volumen: 49, Número: 5, ISSN: Electronic ISSN: 0718-560X, DOI: 10.3856/vol49-issue5-fulltext-2628

Título del Artículo: Heavy metals in sediment and fish from two coastal lagoons of the Mexican Central Pacific

Autores e instituciones de adscripción: Eduardo Ramírez-Ayala[1,2], Miguel A. Arguello-Pérez[1], Adrián Tintos-Gómez[1,2], Jorge A. Mendoza Pérez[3], Juan A. Díaz-Gómez[2], Rebeca Y. Pérez-Rodríguez[4], Gabriel Núñez-Nogueira[5], César A. Sepúlveda-Quiroz[6], Francisco A. Zepeda-González[2], Carlos Lezama-Cervantes[7]

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Resumen:

The present work analyzed the concentration of As, Cd, Pb, and Hg in sediment and the Hg concentration in fish muscle from two coastal lagoons in the states of Jalisco (Barra de Navidad Lagoon) and Colima (Cuyutlán Lagoon), Mexico. Both lagoons showed relatively low levels of metal contamination and potential health risk compared to other Mexican areas. A non-carcinogenic hazard quotient (HQ) was determined. As (10.7 ± 1.3 - 25.4 ± 3.1 µg g-1) and Pb (42.7 ± 4.2 - 123.9 ± 14.7 µg g-1) concentrations exceeded the permissible levels, otherwise for Hg and Cd were below the limits. The highest total mercury concentration was found in Haemulopsis sp. and Lutjanus sp. with 0.23 and 0.1 µg g-1 (wet weight) respectively, out of 14 species of fish analyzed that are frequently consumed locally. HQ based on the national daily per capita consumption of fish in Mexico and the consumption of fish associated with fishing communities in Mexico showed an HQs >2, which manifests the vulnerability of these communities to persistent toxic and bioaccumulative contaminants.

Revista: PROFESORADO-REVISTA DE CURRICULUM Y FORMACIÓN DE PROFESORADO, Volumen: 25, Número: 1, ISSN: Print ISSN: 1138-414X, Electronic ISSN: 1989-6395, DOI: 10.30827/profesorado.v25i3.8683

Título del Artículo: Games as an educational tool: Insights from pre-service teachers during the implementation of La Clase Magica

Autores e instituciones de adscripción: Verónica García Martínez[1], Jesús Izquierdo[1], Silvia Patricia Aquino Zúñiga[1] , Martha Patricia Silva Payró[1]

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Resumen:

This study explored the experience of a group of pre-service teachers who, during their teaching internship, used games as a pedagogical tool for the implementation of La Clase Mágica (LCM) educational model. This model, with sociocultural foundations, places privilege on teacher education that focuses on the planning and design of instructional activities. In the study, we identified aspects of LMC that contributed to the development of the future teaching practice of the participants. Through the use of grounded theory, the study addressed three questions. These questions guided an open data-coding process with respect to the participants' instructional strategies that strongly adhered to the use of games. Thereafter, during a selective codification process, three characteristics of the use of games were analyzed: intrinsic motivation, symbolism and means-end relationship. The 12 study participants were selected considering theoretically-driven sampling and the data saturation principle. The data, collected through interviews, indicate that games constituted a valuable, yet underrecognized, educational tool. The data further revealed that the use of games played an important role during the pre-service teachers' training and teaching process, and helped them enhance their teaching practice.

Revista: BOTANICAL SCIENCES, Volumen: 99, Número: 4, ISSN: Electronic ISSN: 2007-4476, DOI: 10.17129/botsci.2764
Título del Artículo: Gesneriaceae, a little studied family in Mexico: richness and taxonomy in the Tabasco State
Autores e instituciones de adscripción: Saúl Adrián De la Cruz-Córdova[1] , Angélica Ramírez-Roa[2], Carlos Manuel Burelo-Ramos[1]
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Resumen:
The Gesneriaceae family in Mexico includes 26 genera and 118 species distributed principally in the southeastern part of the country. There are few studies of the family in the country, despite its ecological importance and potential as a source of ornamentals.
Question: How many and which species of Gesneriaceae are there in Tabasco and where do they occur?
Study site: State of Tabasco, Mexico, 2014-2019.
Method: We updated the checklist of species and distribution of Gesneriaceae in Tabasco, based on exploration, collection of specimens, and review of herbaria and databases. Conservation status was estimated for each species under IUCN criteria, through the GeoCAT platform.
Results: Ten genera and 16 species of Gesneriaceae were collected. The species are in the categories of vulnerable and near threatened (three each) and 10 are endangered. Taxon descriptions and identification keys are provided.
Conclusion: Tabasco is the first state in Mexico with a checklist of Gesneriaceae, in which specific collections for gesneriads have been carried out, and the corresponding herbarium review. The exploration resulted in a 46 % increase in taxa recorded for the state, representing 38.4 % of genera and 14.4 % of species of gesneriads recorded for the country, although Tabasco is the southern state with the greatest loss of natural environments in the last 60 years.

Revista: BIOINVASIONS RECORDS, Volumen: 10, Número: 3, ISSN: Electronic ISSN: 2242-1300, DOI: 10.3391/bir.2021.10.3.19
Título del Artículo: First records of a non-native spotted raphael catfish Agamyxis pectinifrons (Cope, 1870) (Siluriformes: Doradidae) in the floodplain of the Grijalva basin
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Resumen:
These are the first records of the spotted raphael catfish Agamyxis pectinifrons in a Mexican basin. Three adult specimens, two female and one undetermined, were collected in the floodplain of the Grijalva river near the Metropolitan Zone of Villahermosa. The presence of catfish is likely due to releases by aquarists. Whether this non-native catfish is able to settle and spread in the floodplain of the Grijalva basin is uncertain. If established, this detection will indicate another step in continuous increase in non-native catfish species in Mesoamerican basins dominated originally by native cichlid and poeciliid species.

Revista: REVISTA MEXICANA DE CIENCIAS PECUARIAS, Volumen: 12, Número: 2, ISSN: Electronic ISSN: 2448-6698 Print ISSN: 2007-1124, DOI: 10.22319/rmcp.v12i2.5642
Título del Artículo: Feed efficiency indexes in hair sheep: meat quality and associated genes. Review
Autores e instituciones de adscripción: Carlos Arce-Recinos[1], Alfonso Juventino Chay-Canul[2], Baldomero Alarcón-Zúñiga[3], Jesús Alberto Ramos-Juárez[1], Luis Manuel Vargas-Villamil[1], Emilio Manuel Aranda-Ibáñez[1], Nathaly del Carmen Sánchez-Villegas[1], Ricardo Lopez Dias da Costa[4]
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Resumen:
Hair sheep are essential for meat production in tropical regions, where feed efficiency has been little evaluated. Feed consumption represents more than 70 % of the costs. Therefore, animals with high feed efficiency could increase the profitability of the production system. There exist tools that help select individuals with increased feed efficiency without compromising the quality of the product. This review aims to identify these genetic-molecular and statistical tools, such as residual feed intake (RFI) and residual intake and gain (RIG). Previous studies report differences ranging from 9 to 30 % in the dry matter intake (DMI) of efficient and inefficient animals, maintaining a similar daily weight gain (DWG) using the RFI index. Moreover, the DMI is similar using the RIG index. Although, the DWG of efficient animals is higher by up to 50 g d-1, reducing feed conversion by one kg. This difference is attributed to a group of genes associated with feed efficiency (Adra2a, Gfra1, Gh, Glis1, Il1rapl1, Lep, Lepr, Mc4r, Oxsm, Pde8b, Rarb, Ryr2, Sox5, Sox6, and Trdn). These genes could be used to select hair sheep with high feed efficiency, considering the genes associated with meat quality (Capns1, Cast, Dgat1, Fabp4, Igf-i, Lep, Mstn, and Scd).

Revista: HELIYON, Volumen: 7, Número: 2, ISSN: Electronic ISSN: 2405-8440, DOI: 10.1016/j.heliyon.2021.e06212
Título del Artículo: Bistability and Hopf bifurcation of a tritrophic system with Holling functional responses
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Resumen:
In this paper we analyze the dynamics of a tritrophic food chain, with functional responses of Holling type III and II for the mesopredator and superpredator respectively and logistic growth rate for the prey. We show that there are parameter conditions for which the system has up to three equilibrium points. When three equilibrium points appear we show that each one of them exhibits a supercritical Hopf bifurcation. Moreover we can also show that there is a set of parameters for which the system exhibits a simultaneous Hopf bifurcation.

Revista: COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY C-TOXICOLOGY & PHARMACOLOGY, Volumen: 250, Número: N/A, ISSN: Electronic ISSN: 1532-0456, DOI: 10.1016/j.cbpc.2021.109166

Título del Artículo: Expression of ion transport proteins and routine metabolism in juveniles of tropical gar *(Atractosteus tropicus)* exposed to ammonia

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Resumen:
Tropical gar *(Atractosteus tropicus)* thrives in aquatic habitats with high levels of total nitrogen (TAN) and unionized ammonia (NH3). However, the tolerance of TAN and NH3, the excretion mechanisms involved, and the effects of these chemicals on routine metabolism are still unknown. Therefore, our objectives were to assess the acute toxicity of TAN and NH3 in A. tropicus juveniles after a 96-h exposure (LC50-96 h) to NH4Cl and after chronic exposure to two concentrations (15% and 30% of LC50-96 h TAN) for 12 days, as well as to evaluate the transcriptional effects associated with Rhesus proteins (rhag, rhbg, rhcg) and ion transporters (NHE, NKA, NKCC, and CFTR) in gills and skin; and to determine the effects of TAN and NH3 on routine metabolism through oxygen consumption (μM g-1 h-1) and gill ventilation frequency (beats min-1). LC50-96 h values were 100.20 ± 11.21 mg/L for TAN and 3.756 ± 0.259 mg/L for NH3. The genes encoding Rhesus proteins and ion transporters in gills and skin showed a differential expression according to TAN concentrations and exposure time. Oxygen consumption on day 12 showed significant differences between treatments with 15% and 30% TAN. Gill ventilation frequency on day 12 was higher in fish exposed to 30% TAN. In conclusion, A. tropicus juveniles are highly tolerant to TAN, showing upregulation of the genes involved in TAN excretion through gills and skin, which affects routine oxygen consumption and energetic cost. These findings are relevant for understanding adaptations in the physiological response of a tropical ancestral air-breathing fish.

Revista: LATIN AMERICAN JOURNAL OF AQUATIC RESEARCH, Volumen: 49, Número: 4, ISSN: Electronic ISSN: 0718-560X, DOI: 10.3856/vol49-issue4-fulltext-2674

Título del Artículo: Exotic plus native: findings in an unscheduled fish duoculture

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Resumen:
The development of native fish aquaculture represents an important alternative to mitigate ecological displacement generated by exotic fish. The introduction of native fish in polyculture systems with high commercial value fishes has provided a useful strategy for sustainable aquaculture development. The present study aims to provide information on tilapia, as an exotic species, and Dormitator latifrons, as a native species, in a duo culture not programmed as such. Using juveniles of Pacific fat sleeper D. latifrons leftovers from another experiment, we decide to analyze and report the biological feasibility of a duoculture system with this species and Nile tilapia (Oreochromis niloticus). Two hundred fifty organisms of each species were placed for 90 days in a concrete tank with a capacity of 50 m3 to evaluate the compatibility of these species. The biological variables measured were growth, survival, feed conversion rate, and protein efficiency. The findings suggest a good interaction between species, with adequate growths and a survival rate of 98%. No antagonistic behavior was observed during confinement, suggesting the duoculture of these species may represent a good alternative for tropical sustainable aquaculture.

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Título del Artículo: Evaluation of protein: lipid ratio on growth, feed efficiency, and metabolic response in juvenile yellowtail snapper *Ocyurus chrysurus* (Bloch, 1791)

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Resumen:
This study was conducted to evaluate juveniles' *Ocyurus chrysurus* (13.7 ± 0.45 g initial weight) to utilize lipid as an energy source on growth, feed efficiency, body composition, digestive and hepatic enzyme activities. Four diets of two protein levels (40 and 50%) with two lipid levels (6 and 12%) and 2% of digestible carbohydrates were formulated. Fish were fed for 60 days to apparent satiation at a stocking density of 10 fish per tank (100 L). Growth gain of fish fed 50% dietary protein was higher than of fish fed 40% dietary protein ($P < 0.05$). However, feed efficiency was significantly higher at 12 than 6% of dietary lipid. Whole-body lipid and glycogen in the liver increased dramatically with dietary lipid content-alkaline protease activity trend increased as dietary protein increased. Trypsin activity increased significantly as dietary lipid decreased, whereas chymotrypsin activity showed the opposite trend ($P < 0.05$). Bile salt-dependent lipase activity trend towards increasing as dietary energy decreased. Glucose-6-phosphate dehydrogenase (G6PDH), 6- phosphogluconate dehydrogenase (6PGDH), and fructose-1, 6-biphosphatase (FBPase) significantly increased
with increasing dietary lipid levels. However, alanine aminotransferase (ALT) activity increased with dietary protein content. On the other side, pyruvate kinase (PK) activity increased with both dietary protein and lipid
content. This study indicates that high dietary lipid (12%) improved the feed efficiency but did not reduce dietary protein demand in juveniles *O. chrysurus*.

Revista: FOODS, Volumen: 10, Número: 5, ISSN: Electronic ISSN: 2304-8158, DOI: 10.3390/foods10050958

Título del Artículo: Effects of Non-Nutritive Sweeteners on Energy Intake, Body Weight and Postprandial Glycemia in Healthy and with Altered Glycemic Response Rats

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Resumen:

The aim of this study was to evaluate the effects of non-nutritive sweeteners (NNS) consumption on energy intake, body weight and postprandial glycemia in healthy and with altered glycemic response rats. Animals on normal diet (ND) or high-fat diet (HFD) were divided to receive NNS (sucralose, aspartame, stevia, rebaudioside A) or nutritive sweeteners (glucose, sucrose) for 8 weeks. The NNS were administered at doses equivalent to the human acceptable daily intake (ADI). A test using rapidly digestible starch was performed before and after treatments to estimate glycemic response. No effects of NNS consumption were observed on energy intake or body weight. Sucrose provoked an increased fluid consumption, however, energy intake, and weight gain were not altered. In ND, no effects of NNS on glycemic response were observed. In HFD, the glycemic response was increased after sucralose and stevia when only the final tolerance test was considered, however, after including the baseline test, these results were no longer significant compared to glucose. These findings provide further evidence suggesting that at the recommended doses, NNS do not alter feeding behavior, body weight or glycemic tolerance in healthy and with altered glycemic rats

Revista: VETERINARY AND ANIMAL SCIENCE, Volumen: 14, Número: N/A, ISSN: Electronic ISSN: 2451-943X, DOI: 10.1016/j.vas.2021.100214

Título del Artículo: Effect of tannins from tropical plants on methane production from ruminants: A systematic review

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Resumen:

Methane (CH4) is a greenhouse gas generated during the feed fermentation processes in the rumen. However, numerous studies have been conducted to determine the capacity of plant secondary metabolites to enhance ruminal fermentation and decrease CH4 production, especially those plants rich in tannins. This review conducted a descriptive analysis and meta-analysis of the use of tannin-rich plants in tropical regions to mitigate CH4 production from livestock. The aim of this study was to analyse the effect of tannins supplementation in tropical plants on CH4 production in ruminants using a meta-analytic approach and the effect on microbial population. Sources of heterogeneity were explored using a meta-regression analysis. Final database was integrated by a total of 14 trials. The 'meta' package in R statistical software was used to conduct the meta-analyses. The covariates defined a priori in the current meta-regression were inclusion level, species (sheep, beef cattle, dairy cattle, and cross-bred heifers) and plant. Results showed that supplementation with tropical plants with tannin contents have the greatest effects on CH4 mitigation. A negative relationship was observed between the level of inclusion and CH4 emission (–0.09), which means that the effect of CH4 mitigation is increasing as the level of tannin inclusion is higher. Therefore, less CH4 production will be obtained when supplementing tropical plants in the diet with a high dose of tannins.

Revista: ITALIAN JOURNAL OF ANIMAL SCIENCE, Volumen: 20, Número: 1, ISSN: Electronic ISSN: 15944077, DOI: 10.1080/1828051X.2021.2000342

Título del Artículo: Effect of ryegrass hay and ryegrass silage, cut at two stages of development, on nutrient digestibility, nitrogen balance, and purine derivative excretion in growing sheep

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Resumen:

The objective of this study was to evaluate nutrient digestibility, nitrogen balance, and purine derivative excretion from growing sheep fed on ryegrass silage (S) or ryegrass hay (H) cut at two maturity stages (21 and 35 d). In an in vivo trial, 32 Suffolk × Merino growing sheep (22 ± 2 kg) were used in a completely randomised design with eighth replications in a 2 × 2 factorial arrangement. Four diets were used containing 75% forage (S at 21 or 35 d and H at 21 or 35 d) and 25% concentrate. In an in vitro trial, a completely randomised design was used for gas production parameters. Contents of N and NDF were higher in H (30 and 674 g/kg DM) than in S (26 and 411 g/kg DM). Animals fed on S had higher digestibility ($P < .008$) of DM and OM (661 and 715 g/kg) than H at 35 d (557 and 596 g/kg). In vitro gas production was lower ($P < .04$) in H at 35 d. In vitro DM disappearance at 96 h was lower ($P < .03$) for H at 35 d. Excretion of allantoin (mmol/day) in urine was higher ($P < .001$) in S (7.91 and 3.95) than H (5.01 and 3.03) at 21 and 35 d respectively. Overall, compared to ryegrass hay, ryegrass silage cut at 21 d can be an advantageous feeding strategy for growing sheep without negative effects in nutrient intake, N-balance, and purine derivatives.

Revista: REVISTA MVZ CORDOBA, Volumen: 26, Número: 1, ISSN: Electronic ISSN: 1909-0544 Print ISSN: 0122-0268, DOI: 10.21897/rmvz.1958

Título del Artículo: Effect of restricted suckling and feed complementation on weight and cortisol in Simbrah calves

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Resumen:

Objective. Determine the effect of restricted suckling, early weaning and feed supplementation on weight gains and plasma cortisol concentration of Simbrah calves. Materials and methods. One hundred and twenty 15-day-old lactating calves were distributed in two treatments: T1) calves with restricted suckling, early weaning and feed supplementation (n=30 males/n=30 females); and T2) calves with continuous suckling without feed supplementation (n=30 males/n=30 females). Calves were weighed at the beginning of the experiment, and every 15 days to assess changes in body weight from weaning unto 0 months of age. Blood sampling was carried out at the start of study and for 10 days between 7:30 and 8:30 am. Response variables were evaluated using general linear models. Results. The weight (310.1 and 268.5 kg) and post-weaning weight gain (0.980 kg/day and 0.800 kg/day) was better in the T1 treatment than, for calves in T2 (168.3 and 159.6 kg; and -0.500 and -0.480 kg/day) for males and females, respectively. The cortisol concentration (ng/mL) was higher in T1 compared to T2 from day 0 to day 3 ($p<0.05$), but on day 4 no difference was found. T1 allowed weaning at 3.5 months of calf life and increased post-weaning weight gain. Conclusions. Live weight and post-weaning weight gain were better in T1 treatment animals; however, plasma cortisol levels were increased at the star of the study to subsequently decrease.

Revista: IEEE ACCESS, Volumen: 9, Número: N/A, ISSN: Electronic ISSN: 2169-3536, DOI: 10.1109/ACCESS.2021.3058943

Título del Artículo: Dynamic Membership Functions for Context-Based Fuzzy Systems

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Resumen:

In fuzzy systems, membership functions determine the groups to which a variable can belong to, and these groups are static or only have one setting in some aspect. However, fuzzy systems typically require to model the dynamic environment they represent. Still, this behavior does not reflect the membership groups in a conventional way. Thus, conventional fuzzy systems are not capable of reflecting the dynamics of the real-time context. The approach presented consists of a fuzzy system where the membership functions can have dynamic transformations, according to contextual variables that influence them, to have a model that adjusts in real time. The membership functions' dynamism is achieved because the form in the sets can be transformed; the maximum degree of membership of a set is in a range of zero to one; and, the location of the sets in the discourse universe can vary dynamically. The results show the feasibility of a context-based fuzzy system with dynamic membership functions built-in real time, that has been influenced by contextual variables. Therefore, unlike other proposals, this approach allows modeling the influence of the context on a fuzzy system, making it more adjusted to reality. To illustrate our proposed approach, a case study is presented where a fuzzy system estimates the heat stress in a work environment that uses data acquired from wearable devices. This system automatically generates the following indicators: (i) energy level wasted while performing a physical activity, (ii) personalized measurement of workload level, and (iii) measurement of Occupational Heat Stress (OHS).

Revista: MARINE AND FRESHWATER BEHAVIOUR AND PHYSIOLOGY, Volumen: 54, Número: 44717 ISSN: Electronic ISSN: 1029-0362, DOI: 10.1080/10236244.2021.1993068

Título del Artículo: Common snook reproductive physiology in freshwater and marine environments of Mexico

Autores e instituciones de adscripción: Ulises Hernández-Vidal[1], Wilfrido M. Contreras-Sánchez[1], Xavier Chiappa-Carrara[2], Arlette Hernández-Franyutti[1], María Carmen Uribe[3]

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Resumen:

The common snook (C. undecimalis) is a highly valuable commercial and sport fishing species in marine, estuarine, and freshwater habitats. Despite its abundance in freshwater ecosystems, the information on the reproductive biology comes mainly from studies in the marine habitat. In this work, the reproductive cycle at the gametogenic and hormonal level is addressed in specimens captured in contrasting environments interconnected by the Grijalva-Usumacinta fluvial system. Adult common snook presented a similar temporal pattern in sex steroid concentrations in both environments. Likewise, females and males were observed undergoing advanced maturity simultaneously in both environments. However, females in the freshwater environment did not reach final maturation, and no post-ovulatory follicles were found, indicating that spawn did not happen. Therefore, organisms are synchronized with gonads developing in both habitats, implying migrations of at least 300 km from the freshwater environment to the spawning grounds in the Gulf of Mexico

Revista: CHAOS SOLITONS & FRACTALS, Volumen: 153, Número: N/A, ISSN: Electronic ISSN: 0960-0779, DOI: 10.1016/j.chaos.2021.111555

Título del Artículo: Coexistence in a four-species food web model with general functional responses

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Resumen:
The dynamics of an intraguild predation system is analyzed. Two shared resources, a middle predator and a top predator are considered in the model. Parameter conditions for coexistence in the intraguild system are given. The coexistence of species, through the existence of an equilibrium point or a stable limit cycle or an invariant torus is shown. Conditions to have Andronov-Hopf and Hopf-Hopf bifurcation are given. Then, limit sets and complex dynamical behaviors, can exhibit in the system. For a wide family of functional responses, these results are valid. Numerical simulations with varied functional responses are given and different limit sets are shown.

Revista: MATERIALS, Volumen: 14, Número:19, ISSN: Electronic ISSN: 1996-1944, DOI: 10.3390/ma14195470

Título del Artículo: Chemical and Structural Changes by Gold Addition Using Recharge Method in NiW/Al2O3-CeO2-TiO2 Nanomaterials

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Resumen:
NiWAu trimetallic nanoparticles (NPs) on the surface of support Al2O3-CeO2-TiO2 were synthesized by a three-step synthetic method in which Au NPs were incorporated into presynthesized NiW/Al2O3-CeO2-TiO2. The recharge method, also known as the redox method, was used to add 2.5 wt% gold. The Al2O3-CeO2-TiO2 support was made by a sol–gel method with two different compositions, and then two metals were simultaneously loaded (5 wt% nickel and 2.5 wt% tungsten) by two different methods, incipient wet impregnation and ultrasound impregnation method. In this paper, we study the effect of Au addition using the recharge method on NiW nanomaterials supported on mixed oxides on the physicochemical properties of synthesized nanomaterials. The prepared nanomaterials were characterized by scanning electron microscopy, BET specific surface area, X-ray diffraction, diffuse reflectance spectroscopy in the UV–visible range and temperature-programmed desorption of hydrogen. The experimental results showed that after loading of gold, the dispersion was higher (46% and 50%) with the trimetallic nanomaterials synthesized by incipient wet impregnation plus recharge method than with impregnation plus ultrasound recharge method, indicating a greater number of active trimetallic (NiWAu) sites in these materials. Small-sized Au from NiWAu/ACTU1 trimetallic nanostructures was enlarged for NiWAu/ACT1. The strong metal NPs–support interaction shown for the formation of NiAl2O4, Ni-W-O and Ni-Au-O species simultaneously present in the surface of trimetallic nanomaterial probably plays an important role in the degree of dispersion of the gold active phase.

Revista: GACETA MÉDICA DE MÉXICO, Volumen: 157, Número: 6, ISSN: Electronic ISSN: 2696-1288, Print ISSN: 0016-3813, DOI: 10.24875/GMM.21000233

Título del Artículo: Cardiovascular risk factors associated with coronary ectasia and acute myocardial infarction

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Resumen:
Introduction: Coronary ectasia has a low prevalence in the general population. Its risk factors may differ from those of coronary artery disease.
Objective: To identify the prevalence of coronary ectasia in patients with acute myocardial infarction (AMI) and cardiovascular risk factors (CVRFs).
Methods: Retrospective, cross-sectional study. Out of 3,254 cardiac catheterizations for AMI during one year, 2,975 had no coronary ectasia. We included 558 patients with coronary ectasia on coronary angiography and, as controls, subjects with similar characteristics except for coronary ectasia, and CVRFs were recorded. Descriptive statistics, bivariate and multivariate analysis were used; odds ratio (OR) was calculated.
Results: 279 patients with and without coronary ectasia were studied. The prevalence of coronary ectasia was 8.5%. The platelet/lymphocyte ratio (PLR) was higher in patients with ectasia than in those without ectasia ($p = 0.003$). In the bivariate analysis, associated CVRFs were overweight, obesity and diabetes, and in the multivariate analysis, hypercholesterolemia (OR: 3.90; $p = 0.0001$) and exposure to herbicides (OR: 6.82; $p = 0.020$).
Conclusions: A high prevalence of coronary ectasia was found, with the main risk factors being a history of herbicide use and hypercholesterolemia. PLR was found to be elevated in these patients. Early detection is important due to its association with acute coronary events.

Revista: FRONTIERS IN CARDIOVASCULAR MEDICINE, Volumen: 8, Número: N/A, ISSN: Electronic ISSN: 2297055X, DOI: 10.3389/fcvm.2021.631747

Título del Artículo: Cardiovascular Risk Factors and Social Development Index

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Resumen:

Cardiovascular diseases (CVD) are the leading causes of morbidity and mortality worldwide. The complex etiology of CVD is known to be significantly affected by environmental and social factors. There is, however, a lag in our understanding of how population level components may be related to the onset and severity of CVD, and how some indicators of unsatisfied basic needs might be related to known risk factors. Here, we present a cross-sectional study aimed to analyze the association between cardiovascular risk factors (CVRF) and Social Development Index (SDI) in adult individuals within a metropolitan urban environment. The six components of SDI as well as socioeconomic, anthropometric, clinical, biochemical, and risk behavior parameters were explored within the study population. As a result, several CVRF (waist circumference, waist-to-height ratio, body mass index, systolic blood pressure, glucose, lower high-density lipoprotein cholesterol, triglycerides, and sodium) were found in a higher proportion in the low or very low levels of the SDI, and this pattern occurs more in women than in men. Canonical analysis indicates a correlation between other socioeconomic features and anthropometric, clinical, and biochemical factors (canonical coefficient = 0.8030). Further studies along these lines are needed to fully establish how to insert such associations into the design of health policy and interventions with a view to lessen the burden of cardiovascular diseases, particularly in metropolitan urban environments

Revista: INTERNATIONAL JOURNAL OF QUANTUM CHEMISTRY, Volumen: 121, Número: 16, ISSN: Electronic ISSN: 1097-461X, Print ISSN: 0020-7608, DOI: 10.1002/qua.26684

Título del Artículo: Automating the IRC-Analysis within Eyringpy

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Resumen:

To analyze the evolution of a chemical property along the reaction path, it is necessary to extract all the information from a set of electronic structure computations. However, this process is time-consuming and prone to human error. Here we introduce intrinsic reaction coordinate (IRC)-Analysis, a new extension in Eyringpy, tomonitor the evolution of chemical properties along the intrinsic reaction coordinate, including the complete reaction force analysis. IRC-Analysis collects the entire data set for each snapshot of the reaction coordinate, avoiding human error in data capture, and allowing the study of several chemical reactions in seconds. Eyringpy is written in Python, has a simple input format, and no programming skills are required. Python's Matplotlib library is used for plotting the evolution of the properties along the reaction coordinate. This version can analyze the evolution of bond distances, angles, Wiberg bond indices, natural charges, dipole moments, and orbital energies (and related properties)

Revista: BRAIN RESEARCH BULLETIN, Volumen: 166, Número: N/A, ISSN: Electronic ISSN: 0361-9230, DOI: 10.1016/j.brainresbull.2020.11.002

Título del Artículo: Association between polymorphisms of FKBP5 gene and suicide attempt in a Mexican population: A case-control study

Autores e instituciones de adscripción: Yazmín Hernández-Díaz[1], Thelma Beatriz González-Castro[2], Carlos Alfonso Tovilla-Zárate[3], Isela Esther Juárez-Rojop[4], María Lilia López-Narváez[5], Nonanzit Pérez-Hernández[6], José Manuel Rodríguez-Pérez[7], Alma Delia Genis-Mendoza[8]

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Resumen:

Five polymorphisms (rs4713916, rs4713902, rs1360780, rs9296158 and rs3800373) of FKBP5 gene were analyzed in a case-control study comprising 423 Mexican individuals (146 individuals with suicide attempt and 277 controls). The SNP's were genotyped using the TaqMan-allelic assay. Genotype and allele frequencies were compared between the two groups, then the association between FKBP5 gene polymorphisms and suicide attempt was analyzed. We found a significant association of rs1360780 T minor allele (All, OR = 1.80, 95 % CI = 1.35-2.41, P = 0.0005; Males, OR = 2.25, 95 % CI = 1.44-3.50, P = 0.0002) as a suicide behavior risk factor. Conversely, rs3800373 C minor allele (All, OR = 0.61, 95 % CI = 0.46-0.83; P = 0.0013; Females, OR = 0.33, 95 % CI = 0.22-0.50; P = 0.0001) and the A-C-T-A-C haplotype (OR = 0.06, 95 % CI = 0.01-0.36; P = 0.002) were significantly associated as protective factors. No association was observed with the other SNP's. Our study suggests that SNP's in FKBP5 gene contribute to suicide behavior pathogenesis

Revista: HEALTHCARE, Volumen: 9, Número: 8, ISSN: Electronic ISSN: 2227-9032, DOI: 10.3390/healthcare9080939
Título del Artículo: Association between Short Hours of Sleep and Overweight/Obesity in Mexican Adolescent Population: A School-Based Cross-Sectional Study

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Resumen:
Background/Aim: Obesity in adolescents is increasing; as such, the aim of this study was to determine the prevalence of obesity in Mexican adolescents and examine its possible association with hours of sleep.
Methods: A school-based cross-sectional study was carried out. This study included 863 adolescents aged between 11 and 16 years. The prevalence of obesity was estimated using the body mass index (BMI). The duration of sleep (and other information) was assessed by a self-reported questionnaire. The Cochran–Mantel–Hansel test for categorical variables and a general linear model for continuous variables were used to evaluate the interaction effect of BMI and sex with respect to sleeping and assessed activity conditions.
Results: It was found that 47.6% of the adolescents were overweight/obese. Men were more frequently overweight/obese than women (52.6% vs. 41.8%, $p = 0.002$). Moreover, overweight/obese adolescents were younger and spent fewer daily hours watching television ($p < 0.05$). Men practiced sports more hours per week than women ($p = 0.04$). However, women spent more daily time on the internet ($p = 0.05$), and overweight/obese adolescent women slept fewer hours than overweight/obese men and adolescents with normal weight ($p = 0.008$). Conclusions: The development of strategies for the prevention of overweight/obesity and the improvement of sleep duration should include a gender perspective to improve

Revista: GENES, Volumen: 12, Número:10, ISSN: Electronic ISSN: 2073-4425, DOI: 10.3390/genes12101608
Título del Artículo: Association and Genetic Expression between Genes Involved in HPA Axis and Suicide Behavior: A Systematic Review

Autores e instituciones de adscripción: Yazmín Hernández-Díaz[1], Alma Delia Genis-Mendoza[2], Thelma Beatriz González-Castro[1], Carlos Alfonso Tovilla-Zárate[3], Isela Esther Juárez-Rojop[4], María Lilia López-Narváez[5], Humberto Nicolini[2]
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Resumen:
Suicide behavior (SB) has been highly associated with the response to stress and the hypothalamic–pituitary–adrenal (HPA) axis. The aim of this study was to summarize the results obtained in genetic studies that analyzed the HPA axis—stress pathway and SB through a systematic review. Methods: We performed an online search in PubMed, EBSCO, Web of Science, Scopus, and PsycoInfo databases up to May 2021. We followed the PRISMA guidelines for systematic reviews. We included case-control and expression studies that provided data on mRNA expression and single-nucleotide polymorphisms of genes associated with SB. Results: A total of 21,926 individuals participated across 41 studies (not repeats); 34 studies provided data on single-nucleotide polymorphisms in 21,284 participants and 11 studies reported data on mRNA expression in 1034 participants. Ten genes were identified: FKBP5, CRH, CRHBP, CRHR1, CRHR2, NR3C1, NR3C2, SKA2, MC2R, and POMC. Conclusions: Our findings suggest that key stress pathway genes are significantly associated with SB and show potential as biomarkers for SB.

Revista: NUTRIENTS, Volumen: 13, Número: 9, ISSN: Electronic ISSN: 2072-6643, DOI: 10.3390/nu13093210
Título del Artículo: Association Study among Comethylation Modules, Genetic Polymorphisms and Clinical Features in Mexican Teenagers with Eating Disorders: Preliminary Results

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Resumen:
Eating disorders are psychiatric disorders characterized by disturbed eating behaviors. They have a complex etiology in which genetic and environmental factors interact. Analyzing gene-environment interactions could help us to identify the mechanisms involved in the etiology of such conditions. For example, comethylation module analysis could detect the small effects of epigenetic interactions, reflecting the influence of environmental factors. We used MethylationEPIC and Psycharray microarrays to determine DNA methylation levels and genotype from 63 teenagers with eating disorders. We identified 11 comethylation modules in WGCNA (Weighted Gene Correlation Network Analysis) and correlated them with single nucleotide polymorphisms (SNP) and clinical features in our subjects. Two comethylation modules correlated with clinical features (BMI and height) in our sample and with SNPs associated with these phenotypes. One of these comethylation modules (yellow) correlated with BMI and rs10494217 polymorphism (associated with waist-hip ratio). Another module (black) was correlated with height, rs9349206, rs11761528, and rs17726787 SNPs; these polymorphisms were associated with height in previous GWAS. Our data suggest that genetic variations could alter epigenetics, and that these perturbations could be reflected as variations in clinical features.

Revista: AMERICAN JOURNAL OF PHYSICAL MEDICINE & REHABILITATION, Volumen: 100, Número: 5, ISSN: Electronic ISSN: 1537-7385, Print ISSN: 0894-9115, DOI: 10.1097/PHM.0000000000001588

Título del Artículo: Cardiovascular Risk Factors and Social Development Index

Autores e instituciones de adscripción: Rosa Giannina Castillo-Avila[1], Thelma Beatriz González-Castro[2], Carlos Alfonso Tovilla-Zárate[3], Isela Esther Juárez-Rojop[1], María Lilia López-Narváez[4], José Manuel Rodríguez-Pérez[5], Samuel Suárez-Méndez[1]

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Resumen:

Objective: The aim of the present meta-analysis was to explore the association between FokI polymorphism of the VDR gene and lumbar spine disc degeneration. Design: The search was performed in PubMed, Scopus and Web of Science databases up to January 2020. We selected nine studies that comprised a total of 1549 cases and 1672 controls. The association analysis included the allelic, dominant, recessive, homozygous and heterozygous genetic models. Odds ratios with 95% confidence intervals were used to evaluate the association. The NOS scale was used to measure the quality of the studies included in the analyses; a cut-off of 6 stars was applied. Results: This meta-analysis indicated that FokI polymorphism is significantly associated with lumbar degenerative disc disorder and disc herniation in the homozygous (OR 1.77, CI95% 1.23-2.54, Z p value 0.002, Q p value 0.416) and recessive (OR 1.53; CI95% 1.23-1.90, Z p value <0.000, Q p value 0.224) models. **Conclusions:** Our study indicates that the VDR gene FokI polymorphism may be correlated with the risk of developing a lumbar degenerative disc disorder and disc herniation. However, the small sample population studied and the lack of an evaluation of environmental factors must be taken as limitations in the present meta-analysis

Revista: PARASITOLOGY, Volumen: 148, Número: 12, ISSN: Electronic ISSN: 1469-8161, Print ISSN: 0031-1820, DOI: 10.1017/S0031182021001153

Título del Artículo: Assessment of anthelmintic effectiveness to control Fasciola hepatica and paramphistome mixed infection in cattle in the humid tropics of Mexico

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Resumen:

The objective of this study was to evaluate the effectiveness of the main anthelmintics used for the control of trematodes in cattle in an endemic area in the humid Mexican tropics. A diagnostic study was carried out in nine cattle farms to determine the prevalence of flukes through faecal examination. Only three farms with more than 20 cows positive to trematodes were chosen to determine the effectiveness of commercial anthelmintics (triclabendazole, TCBZ; ivermectin + closantel, (IVM + CLOS); IVM + clorsulon, (CLORS); nitroxynil, NITROX). The prevalence of Fasciola hepatica was 27.1% and 29.6% of paramphistomes. The faecal egg count of trematodes ranged from 0.0 to 12.2 eggs per gram of faeces. The highest effectiveness against F. hepatica was 96.7%, and 92.7% against paramphistomes. NITROX was the most effective in the control of trematodes, while other products, such as IVM + CLORS and TCBZ obtained values lower than 90%, which puts sustainable trematode control at risk. The presence of trematodes was observed on most farms, although the prevalence per herd was highly variable, which indicates that the trematodes F. hepatica and paramphistomes are endemic to the region and a suitable management programme is suggested to control infections caused by these parasites.

Revista: EPIGENETICS, Volumen: N/A, Número: N/A, ISSN: N/A, DOI: 10.1080/15592294.2021.2013420

Título del Artículo: Anthropometric, biochemical, and haematological indicators associated with hyperhomocysteinemia and their relation to global DNA methylation in a young adult population

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Resumen:

Increased homocysteine (Hcy) levels have been associated with a higher risk of cardiovascular and neurodegenerative diseases. Passive DNA demethylation has been suggested as one of the mechanisms implicated in the development of these conditions, and most studies have investigated this relationship in older adult populations. Therefore, this study aimed to evaluate the relationship between corporal composition and biochemical and haematological indicators with plasma homocysteine levels and genome-wide methylation (Alu, LINE-1, and SAT2) in a population of healthy young adults (median age, 18 years). We showed that the prevalence of hyperhomocysteinemia was significantly higher in men (18.5%) than in women (6.6%) (P = 0.034). Increased Hcy level was substantially associated with higher levels of body mass index and visceral fat in females, whereas in males, it was significantly associated with reduced red cell distribution width and high-density lipoprotein (HDL) cholesterol (HDL-C) levels and increased low-density lipoprotein/HDL ratio. Hypomethylation of Alu was significantly associated with reduced levels of HDL-C (<40.0 mg dL-1), whereas hypomethylation of LINE-1 and SAT2 was significantly associated with higher levels of skeletal muscle (<39.3%) in males. These results highlight the participation of hormonal factors in regulating Hcy metabolism, primarily in the female population, whereas changes in DNA methylation observed in males might be associated with the consumption of a protein diet with high levels of methionine, independent of increased Hcy levels.

Revista: ADVANCES IN NANO RESEARCH, Volumen: 10, Número: 3, ISSN: Electronic ISSN: 2287-2388 Print ISSN: 2287-237X ,DOI: 10.12989/anr.2021.10.3.211

Título del Artículo: Analyzing corrosion rates of TiO2 nanotubes/titanium separation passive layer under surface and crystallization changes

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Resumen:
he evaluation of the corrosion resistance of titanium with a TiO2 nanotubes top layer was carried out (TiO2 NT). These nanostructures were evolved into anatase nanoparticles without heat treatment in an aqueous medium, which is a novel phenomenon. This work analyzes the layer between the nanotube bottom and the substrate, which is thin and still susceptible to corrosion. The bottom of TiO2 nanotubes having Fluor resulting from the synthesis process changed between amorphous to crystalline anatase with a crystallite size of about 4 nm, which influenced the corrosion rates. Four kinds of samples were evaluated. A) NT by Ti anodizing; B) NTSB for Ti plates, either modifying its surface or anodizing the modified surface; C) NT-480 for anodized Ti and heat-treated (480) for reaching the anatase phase; D) NTSB-480 for Ti plates, first, modifying its surface using sandblast, after that, anodizing the modified surface, and finally, heat-treated to 480 to compare with samples having induced crystallization and passivation. Four electrochemical techniques were used to evaluate the corrosion rates. The surfaces having TiO2 nanotubes with a sandblast pre-treatment had the highest resistance to corrosion.

Revista: SCIENTIFIC REPORTS, Volumen: 11, Número: 1, ISSN: Electronic ISSN: 2045-2322, DOI: 10.1038/s41598-021-98890-0

Título del Artículo: Analysis of body condition indices reveals different ecotypes of the Antillean manatee

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Resumen:
Assessing the body condition of wild animals is necessary to monitor the health of the population and is critical to defining a framework for conservation actions. Body condition indices (BCIs) are a non-invasive and relatively simple means to assess the health of individual animals, useful for addressing a wide variety of ecological, behavioral, and management questions. The Antillean manatee (Trichechus manatus manatus) is an endangered subspecies of the West Indian manatee, facing a wide variety of threats from mostly human-related origins. Our objective was to define specific BCIs for the subspecies that, coupled with additional health, genetic and demographic information, can be valuable to guide management decisions. Biometric measurements of 380 wild Antillean manatees captured in seven different locations within their range of distribution were obtained. From this information, we developed three BCIs (BCI1 = UG/SL, BCI2 = W/SL3, BCI3 = W/(SL*UG2)). Linear models and two-way ANCOVA tests showed significant differences of the BCIs among sexes and locations. Although our three BCIs are suitable for Antillean manatees, BCI1 is more practical as it does not require information about weight, which can be a metric logistically difficult to collect under particular circumstances. BCI1 was significantly different among environments, revealing that the phenotypic plasticity of the subspecies have originated at least two ecotypes-coastal marine and riverine-of Antillean manatees.

Revista: APPLIED SCIENCES-BASEL, Volumen: 11, Número: 21, ISSN: Electronic ISSN: 2076-3417, DOI: 10.3390/app11219806

Título del Artículo: Analysis of Thermomechanical Stresses of a Photovoltaic Panel Using a Passive System of Cooling

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Resumen:
In this paper, the gradient temperature and the thermomechanical stresses of a photovoltaic panel has been studied with and without heatsink. For this purpose, a three-dimensional analysis was carried out. Accordingly, a heat transfer analysis was developed. The numerical results show a cooling close to 26.7% with the proposed triangle fins compared with the rectangular fins studied before by another author, and the temperature distribution was determined. With this information, the stress analysis was carried out in order to find the effect on the panel due to the thermomechanical stresses. The aluminium frame was restricted to move freely. The resulting stresses field established the magnitude of the alternative stresses, resulting in a 6.7% drop compared with a reference panel. The guidelines of IEC 61215 have to be take into account. Due to the results obtained, the use of this kind of system in desert conditions is desirable because of its high operational temperature and due to the increase in heat transfer by the fins.

Revista: INTERNATIONAL JOURNAL OF COMBINATORIAL OPTIMIZATION PROBLEMS AND INFORMATICS, Volumen: 12, Número: 3 ISSN: Electronic ISSN: 2007-1558., DOI: N/A

Título del Artículo: An Enhanced Method for Diagnosis of Bacterial Vaginosis based on Support Vector Machines with Linear Kernel

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Resumen:

Bacterial Vaginosis (BV)is a pathological condition that causes complications in women's health.Efforts to characterize microorganisms associated to BV etiology have failed. In this work, the Support Vector Machine (SVM) is used as base classifier in threescenarios to identify between classes of BV. The first scenario uses the entire feature set in the dataset. The second scenario uses two sub-datasets created with the features in two rankings obtained from previous work. The third scenario uses one featureat a time to create classifiers. Performance measures in each are given. The dataset used is a real vaginal microbiology test of 201 women from Tabasco, Mexico. Results show that SVM surprisingly obtained 100% accuracy in a classifier madeof a single feature. This research is a first effort to lay the groundwork for computer-based BV diagnosis as advice

Revista: POLYMERS, Volumen: 13, Número: 12, ISSN: Electronic ISSN: 2073-4360, DOI: 10.3390/polym13121945

Título del Artículo: Albendazole Release from Silica-Chitosan Nanospheres. In Vitro Study on Cervix Cancer Cell Lines

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Resumen:

In this work, a pH-responsive drug-carrier based on chitosan-silica nanospheres was developed as a carrier for Albendazole (ABZ), a poorly water-soluble anthelmintic drug. Spherical silica nanoparticles were obtained by Stöber method and further etched to obtain mesoporous particles with sizes ranging from 350 to 400 nm. The specific BET area of nanoparticles increased from 15 m2/g to 150 m2/g for etched silica, which also exhibited a uniform pore size distribution. X-ray powder diffraction showed the presence of amorphous phase of silica and a low-intensity peak attributed to ABZ for the drug-loaded nanoparticles. A uniform layer of chitosan was obtained ranging from 10 to 15 nm in thickness due to the small concentration of chitosan used (0.45 mg of chitosan/mg of SiO2). The in vitro evaluation of hybrid nanoparticles was performed using four cervical cancer cell lines CaSki, HeLa, SiHa and C33A, showing a significant reduction in cell proliferation (>85%) after 72 h. Therefore, we confirmed the encapsulation and bioavailability of the drug, which was released in a controlled way, and the presence of chitosan delayed the release, which could be of interest for the development of prolonged release drug delivery systems

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Título del Artículo: Age dependent physiological tolerances explain population dynamics and distribution in the intertidal zone: A study with porcelain crabs

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Resumen:

Population dynamics and their response to environmental stressors have been widely studied in intertidal organisms. However, how these dynamics and responses change with animal age have been largely ignored to date. Traditionally, it is assumed that younger organisms are more sensitive than adults to environmental stressors; under this perspective it could be predicted that fully grown organisms should be able to occupy the harsh upper limit of their intertidal habitat. However, in some intertidal Porcelain crabs the opposite distribution has been observed. Using Petrolisthes laevigatus, we tested the physiological tolerance of crabs of different sizes (i.e. age) and evaluated how this trait shapes population dynamics (distribution and small-scale migrations under different weather conditions). We determined the abundance and size distribution of P. laevigatus at the middle and upper intertidal levels during sunny and rainy days, finding that abundances decreased drastically and size distribution shifted to smaller individuals on rainy days. In the laboratory, survival and behavioural responses of individuals in water at 5, 10, 15 and 33 PSU salinities were evaluated. Young crabs were found in higher proportion in the upper intertidal while fully grown crabs (i.e. adults) mainly occupied the middle intertidal zone. Young crabs had a higher osmoregulatory capacity than adults, as they were better at regulating passive water uptake when challenged with diluted seawater. This was also correlated with a lower lethal salinity LC50 in young crabs compared to adults. Behavioural trials showed that young crabs performed better escaping in both water and air, at intermediate and reduced salinities than adults. Therefore, weather influences small scale migrations from the upper to the lower intertidal zone, and this migration is also age-dependent, with younger crabs being more tolerant to low salinities and therefore allowing them to remain in the upper intertidal zone during raniny days.

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Título del Artículo: Agave guadarramae *(Asparagaceae: Agavoideae)*, una especie nueva del sureste de México

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Resumen:

Agave guadarramae N.C. Jiménez et García-Mend., a new species from the Sierra Madrigal, Municipality of Teapa, Tabasco, Mexico, is described and illustrated. It belongs to section Guatemalenses; it is compared with A.

calderonii Trel. (the correct binomial for the taxon known as A. parvidentata Trel.), and A. pachycentra Trel., of the same section, and A. acicularis Trel., of the section Antillares. The species is characterized by the open medium-sized solitary rosettes, dark green spathulate or broadly lanceolate leaves, margin denticulate to entire, teeth closely spaced; open panícles, with compact umbels, bulbiferous, peduncle equal or longer than the leaves, and small flowers and fruits. Due to its limited area of occupation and distribution known from a single locality, the new species is considered as Vulnerable (VU D2), according to the IUCN criteria.

Revista: JOURNAL OF MAMMALOGY, Volumen: 102, Número: 3, ISSN: Electronic ISSN: 1545-1542 Print ISSN: 0022-2372, DOI: 10.1093/jmammal/gyaa159

Título del Artículo: Activity patterns of tayra (Eira barbara) across their distribution

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Resumen:

Species' activity patterns are driven by the need to meet basic requirements of food, social interactions, movement, and rest, but often are influenced by a variety of biotic and abiotic factors. We used camera-trap data to describe and compare the activity patterns of the relatively poorly studied tayra (Eira barbara) across 10 populations distributed from the south of Mexico to the north of Argentina, and attempted to identify biotic or abiotic factors that may be associated with variation in level of diurnality. In a subset of sites we also aimed to document potential seasonal variation in activity. We used a kernel density estimator based on the time of independent photographic events to calculate the proportion of diurnal, crepuscular, and nocturnal activity of each population. Tayras were mostly active during diurnal periods (79.31%, 759 records), with a lower proportion of crepuscular activity (18.07%, 173 records) yet we documented some variation in patterns across the 10 study areas (activityoverlap coefficient varied from Δ4 = 0.64 to Δ1= 0.95). In northern localities, activity peaked twice during the day (bimodal) with most activity ocurring in the morning, whereas closer to the geographical equator, activity wasconstant (unimodal) throughout the day, peaking at midday: activity either was unimodal or bimodal in southern localities. Despite investigating multiple potential abiotic and biotic predictors, only latitude was associated with variation in the proportion of diurnal activity by tayras across its range, with increased diurnal activity closer to the equator. Seasonal comparisons in activity showed a tendency to reduce diurnality in dry versus rainy seasons, but the pattern was not consistently significant. This is the most comprehensive description of tayra activity patterns to date, and lends novel insight into the potential flexibility of the species to adapt to local conditions.

Revista: REVISTA DE LA SOCIEDAD ENTOMOLOGICA ARGENTINA, Volumen: 80, Número: 1, ISSN: Electronic ISSN: 1851-7471, DOI: 10.25085/rsea.800104

Título del Artículo: Acaricidal activity of plant extracts against the red palm mite Raoiella indica (Acari: Tenuipalpidae)

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Resumen:

The red palm mite Raoiella indica Hirst has recently invaded the Neotropical region, which demands the implementation of pest management strategies. In this study, toxicity of leaf extracts of Mexican oregano Lippia berlandieri Schauer, neem Azadirachta indica A. Juss, Mexican mint Plectranthus amboinicus (Lour.) Spreng., rue Ruta graveolens L. and Persian lime Citrus x latifolia Tanaka against R. indica was evaluated under laboratory conditions. Raoiella indica females were exposed to each plant extract at concentrations of 0.25, 0.50, 0.75 and 1% (v/v) to assess the cumulative mortality at 24, 48 and 72 h after exposure. Mortality rates of R. indica rose due to increased extract concentration and exposure time. The strongest acaricidal activity was observed with L. berlandieri, A. indica and P. amboinicus, whose 1% concentration and 72 h exposure caused a mean R. indica mortality of 100, 90 and 78%, respectively. These plant extracts hold promise for the chemical management of this pest

Revista: NATURAL HAZARDS, Volumen: N/A, Número: N/A, ISSN: Electronic ISSN: 1573-0840, Print ISSN: 0921-030X, DOI: 10.1007/s11069-021-04943-y
Título del Artículo: A provisional climatology of the mesoscale convective systems in the Yucatan Peninsula in summer
Autores e instituciones de adscripción: Arturo Valdés-Manzanilla [1]
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Resumen:
Principal characteristics of summer mesoscale convective systems in the Yucatan Peninsula, Mexico, were studied using three years of radar imagery. MCSs occurred almost daily in this region, having a minimum monthly during July and August, coinciding with the Midsummer Drought. MCS movements were mostly from E, NE, and SE directions, with a mean propagation speed of 6.0 ms–1. They had a mean duration of 6.4 h, with initiation time around the afternoon and dissipation time around midnight. The most crucial synoptic forcing that infuenced MCSs formation in this region was the trough, precisely a local type called Mayan trough, followed by tropical waves and unclassifable synoptic. Inactive periods of MCSs formation related to a Caribbean low-level jet stronger than average. The organization of MCSs convection showed that half of them had a linear pattern with an N-S orientation of convective lines, and their organization was normal or parallel to the MCS orientation. Mesoscale phenomena like sea breezes signifcantly infuence the formation of MCSs in this region.

Revista: APUNTES UNIVERSITARIOS, Volumen: 11, Número: 3, ISSN: Electronic ISSN: 2304-0335, DOI: 10.17162/au.v11i3.698
Título del Artículo: A mark through Time: academic transcendence from university teaching practice
Autores e instituciones de adscripción: Carlos Mario Morales Zárate[1], Carlos Arturo Olarte Ramos[1]
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Resumen:
Contemporary education pretends to leave behind traditional teaching models, where the person in front of the student body dominated the classroom; currently, bilateral participation is favoured for the construction of knowledge. This article aims to analyse the perception that higher education teachers have of their role in teaching and how their practice influences the lives of their students; for this, a qualitative research with a phenomenological approach was carried out, in which some interviews were conducted during the second semester of 2020, with a group of teachers from a higher institution located in the Mexican state of Tabasco. It was identified that in order to transcend, knowledge in the area, a vocation for service and empathy are required, with which the teaching body makes commitments and responds to the professional demands of its students and the institution in which it collaborates. It is concluded that transcendence becomes subjective, since its significance will depend not only on what those who are in front of the group think and do, but also on those who receive the teaching.

Revista: MATHEMATICS ENTHUSIAST, Volumen: 18, Número: 44593, ISSN: Electronic ISSN: 1551-3440, DOI: 10.54870/1551-3440.1513
Título del Artículo: A formal justification of the Ancient Chinese Method of Computing Square Roots
Autores e instituciones de adscripción: Edilberto Najera[1], Leslie Cristina Najera-Benitez [2]
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Resumen:
In this paper a formal justification of the ancient Chinese method for computing square roots is given. As a result, some already known properties of the square root which is computed with this method are deduced. If any other number base is used, the justification given shows that the method is applied in the same way and that the deduced properties are still being fulfilled, facts that highlight the importance of positional number systems. It also shows how to generalize the method to compute high orders roots. Although with this elementary method you can compute the square root of any real number, with the exact number of decimal places that you want, the mathematicians of ancient China were not able to generalize it for the purpose of computing irrational roots, because they did not know a positional number system. Finally, in order for high school students gain a better understanding of number systems, the examples given in this paper show how they can use the square root calculus with this method to practice elementary operations with positional number systems with different bases, and also to explore some relationships between them

Revista: 3C EMPRESA, Volumen: 10, Número: 3, ISSN: Electronic ISSN: 2254-3376, DOI: 10.17993/3cemp.2021.100347.87-107
Título del Artículo: A leading company in social responsibility: bio pappel
Autores e instituciones de adscripción: Cecilia Garcia-Muñoz Aparicio[1] , Maria Del Carmen Navarrete Torres[1]]
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Resumen:
This article describes Bio Pappel as one of the 10 best Mexican companies with Corporate Social Responsibility (CSR), for which, its background, policies, and the way in which it contributes to improving the environment were investigated. A descriptive case study methodology was used through documentary sources such as magazines, books, web, documents, whose objective was to carry out an analysis of the actions of social responsibility, demonstrating that the organization presents a sustainable model that allows the paper industry to reduce its costs. Carefully using trees, water and energy, recycling materials, training their employees in ethics, anti-corruption policy and human rights, being a reference for other organizations. It concludes that this organization makes a positive impact on society since it encourages recycling and waste separation, saving water and the importance of doing so in new generations, creating social awareness.

Revista: SCIENTIFIC DATA, Volumen: 8, Número: 1, ISSN: Electronic ISSN: 2052-4463, DOI: 10.1038/s41597-021-00912-z
Título del Artículo: Global data on earthworm abundance, biomass, diversity and corresponding environmental properties
Autores e instituciones de adscripción: Phillips, Helen R. P [1], Bach Elizabeth M[2], Bartz Marie L C[3], Bennett Joanne M[4], Uribe-Lopez Sheila [5]...
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Resumen:
Earthworms are an important soil taxon as ecosystem engineers, providing a variety of crucial ecosystem functions and services. Little is known about their diversity and distribution at large spatial scales, despite the availability of considerable amounts of local-scale data. Earthworm diversity data, obtained from the primary literature or provided directly by authors, were collated with information on site locations, including coordinates, habitat cover, and soil properties. Datasets were required, at a minimum, to include abundance or biomass of earthworms at a site. Where possible, site-level species lists were included, as well as the abundance and biomass of individual species and ecological groups. This global dataset contains 10,840 sites, with 184 species, from 60 countries and all continents except Antarctica. The data were obtained from 182 published articles, published between 1973 and 2017, and 17 unpublished datasets. Amalgamating data into a single global database will assist researchers in investigating and answering a wide variety of pressing questions, for example, jointly assessing aboveground and belowground biodiversity distributions and drivers of biodiversity change.

Revista: REVISTA UNIVERSIDAD Y SOCIEDAD, Volumen: 13, Número: N/A, ISSN: 2218-3620, DOI: N/A
Título del Artículo: Prescriptive assessment of the first level of medical care
Autores e instituciones de adscripción: Priego Alvarez, Heberto Romeo[1]; Avalos Garcia, Maria Isabel [1]; Bracqbien Noygues, Catherine Sylvie[1]
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Resumen:
One of the challenges that governments and health systems have in the world to guarantee access to generic (GM) medicines is their acceptance and use by health personnel and the population, therefore, research on this issue is of great relevance. The objective of the article is to analyze the prescriptive assessment of doctors of the first level of care towards GM. Among the methods used is the qualitative phenomenological study, carried out with two focus groups. The sample was made up of twelve doctors who work in the first level of care in the Health Sector. Data processing was carried out in the MAXQDA program (version 2018.2). Experts participated during the process to validate the study. As a result it was obtained that the age range of the informants was from 29 to 62 years of age, most of them were specialists in family medicine who work under care pressure. The main advantage they identify in the MG is the low cost, however, ignorance and distrust still prevail about its effectiveness. As part of the Conclusions, it can be stated that the prescriptive assessment of first-level care physicians is influenced by their preference for the original medications. The investment made by laboratories and the sponsorship of pharmaceutical industries for profit defines their decision-making in prescribing.

Revista: CADERNO PROFISSIONAL DE MARKETING UNIMEP, Volumen: 9, Número: 2, ISSN: 2317-6466, DOI: N/A
Título del Artículo: Marketing in e-commerce of handicraft products
Autores e instituciones de adscripción: Martinez Prats, German [1]; Silva Hernandez, Francisca[1]
[1] Universidad Juarez Autonoma de Tabasco

Resumen:
The dynamics in the economic sector and the attenuating influence of technological and electronic media has led society to strengthen mechanisms that ensure access to brands, products and services promptly. E-commerce for artisans has represented a way to disclose and increase the visibility of their brands, products and services, building good relationships between consumers and partners. Artisan companies in their digital transition have integrated e-commerce in their business model, thus strengthening the marketing of their brand, product and service; collaborating to the integration of a new business model, adjusting strategies that help to promote the promotion of cultural diffusion and greater support for the development of small companies dedicated to the artisan trade. In this way, the development of the handicraft activity is allowed with a greater growth of this business segment and its scope is not only local but also international, contributing to the preservation and dissemination of the cultural traditions of the entities.

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