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## FACULTAD DE ARQUITECTURA, DISEÑO Y ARTE

### 1. Originalidad versus masividad

Revista ARQ. WoS

**Rayna Razmilic**

Resumen: El artículo realiza una reflexión en torno al proyecto Sistema modular de preescolares, proyecto desarrollado por la oficina de arquitectura Equipo Mazzanti. Esta iniciativa es una respuesta arquitectónica a la política pública de educación para la primera infancia promovida por el gobierno colombiano y, en ese sentido, el texto no sólo aborda dicho contexto, sino que también pone el proyecto en relación al trabajo del estudio y al tema de la revista Masividad.

### 2. Una especie de circo raro / A sort of weird circus

Revista ARQ. WoS

**David Caralt**

Resumen: Crítica del edificio del Teatro Regional del Biobío en Concepción, de los arquitectos Smiljan Radic, Eduardo Castillo y Gabriela Medrano.

## FACULTAD DE CIENCIAS DE LA EDUCACIÓN

### 1. A developmental evaluation approach to lesson study: exploring the impact of lesson study in London schools

Professional Development in Education. WoS

Nicholas Wollaston, David Godfrey, Jake Ander, Sara Seleznyov, **Fabián Barrera**

Resumen: This article presents a methodology for the developmental evaluation of a lesson study programme in primary and secondary schools. Our approach combined the principles of (i) user-focused evaluation, in which, as evaluators, we acted as participatory members of the innovation team and sought to involve users in the design and implementation of evaluation tools, (ii) a multi-level logical model to guide data collection and impact measurement and (iii) an improving rather than proving approach to evaluation. The evaluation tools were used on a programme to promote lesson study in London school involving 133 teachers and 33 schools. The evaluation methodology included outcomes at school leadership, teacher and student levels. Issues of internal and external validity are discussed and strengths and weaknesses are described. Findings showed promise in the use of our scale to measure changes in teacher pedagogical outcomes and in the recording of

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qualitative changes to both teachers and students as a result of the lesson study cycles. Suggestions for the future use and development of this methodology are proposed, including better use of control groups and quantitative measures to record changes in learning outcomes for students.

### 2. Basal mild dehydration increase salivary cortisol after a friendly match in young elite soccer players

Frontiers Physiology. WoS

Mauricio Castro-Sepulveda, Rodrigo Ramirez-Campillo, **Felipe Abad-Colil**, Camila Monje, Luis Peñailillo, Jorge Cancino, Hermann Zbinden-Foncea

Resumen: A soccer match induce changes in physiological stress biomarkers as testosterone (T), cortisol (C), and testosterone: cortisol (T:C) ration. Hydration state may also modulate these hormones, and therefore may alter the anabolic/catabolic balance in response to exercise. The role of hydration status before the match in these biomarkers has not yet been reported. The aim of this study was to compare the salivary T, C and the T:C responses after two friendly matches in well-hydrated and mild-dehydrated elite young male soccerplayer. Seventeen players (age,  $16.8 \pm 0.4$  years  $VO_{2max}$ ,  $57.2 \pm 3.6$  ml/kg-1/min-1) were divided into two teams. Before the matches the athletes were assessed for hydration level by the urine-specific-gravity method and divided for the analysis into well-hydrated (WHn9USG1.010g/mL-1) and mild-dehydrated (MDn8USG,1.010to1.020 g/mL-1) groups. Hormones were collected before and after each match by saliva samples. The mean (HRmean) and maximal (HRmax) heart rate were measured throughout the matches. A two-way ANOVA was used to compare T, C and T:C between and within groups. Similar HRmean (WH,  $83.1 \pm 4.7\%$  MD,  $87.0 \pm 4.1$  p0.12) and HRmax (WH,  $93.2 \pm 4.4\%$  MD,  $94.7 \pm 3.7\%$  p0.52) were found for both groups during the matches. No differences were found before the matches in the T (p0.38), C (p66) nor T:C (p0.38) between groups. No changes within groups were found after matches in neither group for T (WH, p0.20 MD, p0.36) and T:C (WH, p0.94 MD, p0.63). Regarding the C, only the MD group showed increases (28%) after the matches (MD, p0.03 WH, p0.13). In conclusion MD group exacerbate the C response to friendly matches in elite young male soccer players, suggesting that dehydration before match may be an added stress to be considered.

### 3. Cross-cultural comparability of noncognitive constructs in TIMSS and PISA

Assessment in Education: Principles, Policy Practice. WoS

Janine Buchholz, Jia He, **Fabián Barrera**

Resumen: Noncognitive assessments in Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study share certain similarities and provide complementary information, yet their comparability is seldom checked and convergence not sought. We made use of student self-report data of Instrumental Motivation, Enjoyment of Science and Sense of Belonging to School targeted in both surveys in 29 overlapping countries to (1) demonstrate levels of measurement comparability, (2) check convergence of different scaling methods within survey and (3) check convergence of these constructs with student achievement across surveys. We found that the three scales in either survey (except Sense of

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Belonging to School in PISA) reached at least metric invariance. The scale scores from the multigroup confirmatory factor analysis and the item response theory analysis were highly correlated, pointing to robustness of scaling methods. The correlations between each construct and achievement was generally positive within each culture in each survey, and the correlational pattern was similar across surveys (except for Sense of Belonging), indicating certain convergence in the cross-survey validation. We stress the importance of checking measurement invariance before making comparative inferences, and we discuss implications on the quality and relevance of these constructs in understating learning.

#### 4. Exercise and glucose control in children with insulin resistance: prevalence of non-responders

Pediatric Obesity. WoS

Cristian Alvarez, Rodrigo Ramirez-Campillo, Robinson Ramirez-Velez, Alicia Alonso-Martinez, Mikel Izquierdo, Steve Harridge, **Johnattan Cano Montoya**

Resumen: Exercise training improves cardiometabolic outcomes in mean terms, but little information is available in children about the impact of the frequency/week and the wide inter-individual variability to exercise training reported in adults. OBJECTIVES: We compared the effects of resistance training (RT) and high-intensity interval training (HIT), and high and low frequency of training/week, for their effectiveness in decreasing insulin resistance (IR) levels in schoolchildren. A second aim was to describe and compare the prevalence of non-responders (NRs) between the different frequencies of training protocol. METHODS: Fifty-three schoolchildren with IR were randomly assigned into four groups: RT at high frequency (three times/week), HIT at high frequency, RT at a low frequency (two times/week) and HIT at low frequency. The intervention lasted 6 weeks. Blood samples and body composition, blood pressure and performance measurements were taken before and after the intervention. RESULTS: The prevalence of NRs was similar between the RTHF and HITHF (25.0% vs. 25.0%, P (0.05) and RTLf and HITLf groups (20.0% vs. 46.6%, P 0.174) for decreasing homeostasis model assessment of IR. However, significant differences in the prevalence of NRs were detected between RTHF and HITHF groups in fasting glucose (FGL) (18.7% vs. 58.3%, P 0.031). CONCLUSIONS: Both RT and HIT improves the glucose control parameters in schoolchildren over 6 weeks, but only HIT is independent of a high or low frequency of training/week. The prevalence of NRs is similar for decreasing homeostasis model assessment of IR comparing each exercise mode in high vs. low frequency/week. However, both high- and lowfrequency RT and HIT results in differences in the prevalence of NRs for FGL and other cardiometabolic and performance outcomes.

#### 5. Patterns of healthy lifestyle behaviours in older adults: Findings from the Chilean National Health Survey 20092010

Experimental gerontology. WoS

Claudia Troncoso, Fanny Petermann-Rocha, Rosemary Brown, Ana María Leiva, María Adela Martínez, Ximena Díaz-Martínez, **Alex Garrido-Mendez**, Felipe Poblete-Valderramai, José A. Iturra-Gonzalez, Marcelo Villagran,

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Lorena Mardones, Carlos Salas-Bravo, Natalia Ullo, Antonio Garcia-Hermoso, Robinson Ramírez-Vélez, Jaime Vásquez Gómez, Carlos Celis-Morales

Resumen: The purpose of this study was to investigate healthy lifestyle behaviours across age categories in the older population in Chile. Data from 1,390 older adults (60years), in the 2009-2010 Chilean National Health Survey were analyzed. We derived the following age categories: 60-65, 66-70, 71-75, 76-80 and 80 years. The association between age and compliance with healthy lifestyle behaviours (smoking, sitting time, physical activity, sleep duration and intake of salt, alcohol, fruit and vegetables) were investigated using logistic regression. The probability of meeting the guidelines for alcohol intake (OR trend: 1.35 [95% CI: 1.11 1.64], p0.001) and smoking (OR trend: 1.23 [95% CI: 1.13 1.33], p0.0001) increased with age, whereas spending 4 hours per day sitting time or engaging in at least 150 minutes of physical activity per week or sleep on average between 7 and 9 hours per day were less likely to be met with increasing age (OR trend: 0.77 [95% CI: 0.71 0.83], p0.000 OR trend: 0.73 [95% CI: 0.67 0.79], p0.0001, and OR trend: 0.89 [95% CI: 0.82 0.96], p0.002, respectively). No significant trend across age categories was observed for fruit and vegetables, and salt intake.

## FACULTAD DE CIENCIAS DE LA SALUD

### **1. Consumir más de 100 g de alcohol a la semana aumenta el riesgo de enfermedades cardiovasculares y disminuye la esperanza de vida**

Revista Medica de Chile. WoS

Ana Maria Leiva, Carlos Celis, Maria Adela Martinez, Fanny Petermann, **Alex Garrido**

Resumen: Existe una controvertida asociación entre el consumo de alcohol y el desarrollo de enfermedades cardiovasculares (ECVs). Por una parte, algunos estudios señalan que las personas que beben alcohol moderadamente podrían disminuir el riesgo de ECVs, mientras que otros estudios sugieren que el consumo de alcohol podría aumentar el riesgo de estas patologías.

### **2. El poder de la imagen en la investigación cualitativa en salud**

Cadernos de Saude Publica. WoS

**Andrés Bianchetti**

Resumen: Reseña bibliográfica del libro Fotovoz: Un método de investigación en ciencias sociales y de la salud.

### **3. Hypoxia and Preeclampsia increase reck expression in umbilical vein endotelial cells**

Placenta. WoS

Jorge Maldonado, Leila Fernandez, Luis Sobrevia, **Jaime Gutierrez**

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Resumen: Abnormal perfusion of the placenta in preeclampsia Results in uteroplacental hypoxia, which associates with altered angiogenesis in the placental vasculature. Reversion-inducing-cysteine-rich-protein with kazal motifs (RECK) is a plasma membrane protein that inhibits different metalloproteinases (MMPs) acting as a key regulator of angiogenesis. Objective: To determine whether hypoxia modulates the expression and MMPs activity in human umbilical vein endothelial cells (HUVECs) from normal and preeclampsia pregnancies. Methods: Expression and localization of RECK protein in human umbilical cords from normal (n 14 3) and preeclampsia pregnancies (n 14 3) were evaluated by immunofluorescence. The expression of RECK, MMPs and MMP activity (fluorescence gelatinase assay) were evaluated in HUVECs exposed to 1 or 20% oxygen. Results: RECK is expressed in the umbilical cord vein endothelium and its protein abundance is higher in preeclampsia compared with normal pregnancies ( $1.8 \pm 0.2$  fold,  $P < 0.05$ ). Expression of RECK was higher ( $1.9 \pm 0.1$  fold) but MMP-2 and MMP-9 was lower ( $0.35 \pm 0.02$  fold) in HUVECs from preeclampsia compared with normal pregnancies under 20% oxygen. Cells from normal pregnancies exposed to 1% oxygen show higher RECK expression ( $1.5 \pm 0.2$  fold) but reduced MMP-2 and MMP-9 expression ( $0.35 \pm 0.02$  fold) and activity ( $0.45 \pm 0.02$  fold) compared with cells in 20% oxygen. Exposure of cells from preeclampsia to 1% oxygen did not alter the expression and activity of RECK, MMP-2, and MMP-9. Conclusion: Induced expression of RECK by preeclampsia in the foeto- placental endothelium may result from its exposure to a low oxygen tension.

#### **4. Molecular mechanisms involved in the protective actions of Selective Estrogen Receptor Modulators in brain cells**

Frontiers in Neuroendocrinology. WoS

Maria Rincon Benavides, Eliana Baez-Jurado, George E Barreto, Gina Guio-Vega, Ghulam Md Ashraf, Oscar Hidalgo-Lanussa, Luis Miguel Garcia segura, Amirhossein Sahebkar, **Valentina Echeverria**

Resumen: Selective estrogen receptor modulators (SERMs) are synthetic compounds with protective effects in neurons and glial cells. Among the beneficial effects that have been attributed to these compounds, the most relevant include the regulation of inflammation, attenuation of astrogliosis and microglial activation, prevention of excitotoxicity and neuronal cell death. Under pathological conditions, the mechanism of action of the SERMs involves two-way activation of estrogen receptors (ERs) and the G protein-coupled receptor for estrogen (GRP30), which correspond to genomic and non-genomic pathways, respectively. These receptors trigger neuroprotective signals such as the increase of antioxidants or the activation of survival response kinase-mediated pathways. Despite the advances in the knowledge of the pathways activated by the SERMs, their mechanism of action is still not entirely clear, and there are several controversies. In this review, we highlight the molecular pathways activated in different brain cells, mainly astrocytes, as a response to treatment with raloxifene and tamoxifen.

#### **5. Preeclampsia associates with increased reck expression in trophoblast and reduced migration, invasión, and endothelial like differentiation on first trimester human trophoblast cell**

Placenta. WoS

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**Jaime Gutierrez**, Alejandro Aedo, Jacob Mora, Jorge Maldonado, Rocío Salsoso, Fernando Toledo, Marcelo Farías, Fabián Pardo, Andrea Leiva, Luis Sobrevia

Resumen: In normal pregnancies, the trophoblast invades the maternal decidua reaching and modifying the spiral arteries. The trophoblast differentiates to an endothelial-like phenotype, which is required to increase the blood flow to the placenta. However, in preeclampsia the trophoblast invasion and differentiation capacity is affected, a phenomenon that emerges as a potential cause of this syndrome. Reversion-inducing-cysteine-rich-protein with kazal motifs (RECK) is a plasma membrane protein that inhibits different metalloproteinases, acting as a key regulator of cell migration, invasion, and angiogenesis. Objectives: To determine the role of RECK on migration, invasion, and endothelial-like differentiation of human trophoblast and its expression and localization in human placentas from normal and preeclampsia pregnancies. Methods: Expression and localization of RECK in the human first trimester trophoblast cell line HTR8/SVneo and in placentas from normal pregnancy and early preeclampsia were evaluated by western blot and immunofluorescence. Cells were transfected with the expression vectors for human RECK or shRNA against RECK. Migration/invasion was assayed by the Boyden chambers migration/invasion assays. The endothelial-like differentiation was evaluated by in vitro pre-established endothelial-vascular tubes formation assay. Results: RECK protein was detected at the plasma membrane of HTR-8/SVneo cells. Knockdown cells for RECK showed increased ( $P < 0.05$ ,  $n = 3$ ) migration ( $1.4 \pm 0.1$  fold), invasion ( $2.2 \pm 0.2$  fold), and tubes formation ( $1.4 \pm 0.1$  fold). These phenomena were reduced by overexpressing this protein. RECK was also detected in the syncytiotrophoblast in human placentas, and preeclampsia resulted in higher protein abundance ( $1.4 \pm 0.2$  fold,  $P < 0.05$ ,  $n = 5$ ) compared with placentas from normal pregnancies. Conclusion: RECK is a protein expressed from early in pregnancy in human trophoblast where it could play a role in the pathogenesis of preeclampsia.

## 6. Raloxifene attenuates oxidative stress and preserves mitochondrial function in astrocytic cells upon glucose deprivation

Journal of cellular Physiology. WoS

Ghulam Md Ashraf, Eliana Baez Jurado, George E. Barreto, Oscar Hidalgo Lanussa, Diego J. Vesga, Amirhossein Sahebkar, **Valentina Echeverría**

Resumen: Oxidative stress and mitochondrial dysfunction induced by metabolic insults are both hallmarks of various neurological disorders, whereby neuronal cells are severely affected by decreased glucose supply to the brain. Likely injured, astrocytes are important for neuronal homeostasis and therapeutic strategies should be directed towards improving astrocytic functions to improve brain outcome. In the present study, we aimed to assess the actions of raloxifene, a selective estrogen receptor modulator in astrocytic cells under glucose deprivation. Our findings indicated that pretreatment with  $1 \mu\text{M}$  raloxifene results in an increase in cell viability and attenuated nuclei fragmentation. Raloxifene's actions also rely on the reduction of oxidative stress and preservation of mitochondrial function in glucose deprived astrocytic cells, suggesting the possible direct effects of this compound on mitochondria. In conclusion, our results demonstrate that raloxifene's protective actions might be mediated in part by astrocytes in the setting of a metabolic insult.

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## 7. Pitiriasis rosada en el embarazo: Reporte de caso

Revista Chilena de Obstetricia y Ginecología. SciELO

Jorge Guitierrez Pinto, María Trujillo Gittermann, Marcela Concha Rogazy, **Astrid Von Oetinger**

Resumen: A pesar de que la Pitiriasis Rosada se considera una condición cutánea benigna, en el marco del embarazo, hay estudios que relacionan la aparición de esta patología con complicaciones asociadas en el feto. Metodología: Se realiza un reporte de caso, prospectivo, a una mujer de 36 años chilena que presentó esta patología durante la semana 12 de gestación. El objetivo fue describir, la evolución y control y contrastar su evolución con la evidencia científica actual sobre esta temática. Resultados: Paciente presenta placas eritematodescamativas concordantes con diagnóstico de pitiriasis rosada (superficie afectada menos al 50% de su cuerpo), sin presentar enantema, ni síntomas sistémicos. Tuvo un recién nacido sano a las 38 semanas de gestación, sin presentar ningún efecto adverso de los que relaciona la literatura analizada. Conclusiones: Distintos estudios han estudiado los posibles efectos adversos en el feto en madres que han presentado Pitiriasis Rosada en el embarazo, sin embargo, en este reporte de caso no se presentaron complicaciones asociadas. Faltan estudios realizados en mayor cantidad de pacientes.

## 8. Enfoque de Género en la atención de salud de pacientes con enfermedades cardiovasculares en Chile

Revista chilena de cardiología. SciELO

Lizet Véliz Rojas, **Andrés Bianchetti**

Resumen: Carta el editor respecto a la necesidad en incorporar el enfoque de género en protocolos de atención de salud en Chile.

# FACULTAD DE ECONOMÍA Y NEGOCIOS

## 1. An illiquid market in the desert: estimating the cost of water trade restrictions in northern Chile

Environment and Development Economics. WoS

Gonzalo Edwards, Eric C. Edward, Gary D. Libecap, **Oscar Cristi**

Resumen: This paper estimates the cost of a policy to restrict water trades to mining firms in northern Chile in order to protect riparian ecosystems and indigenous agriculture. In response to the policy, mining firms have developed high-cost desalination and pumping facilities to secure adequate water supplies. We develop a methodology and estimate the cost of market transactions that fail to occur due to the policy. Lost trade surplus is estimated at US\$52 million per year. Without trade restrictions, around 86 per cent of the remaining agricultural water in the region would be transferred to mining.

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## FACULTAD DE INGENIERÍA Y TECNOLOGÍA

### 1. Atmospheric Concentrations of New Persistent Organic Pollutants and Emerging Chemicals of Concern in the Group of Latin America and Caribbean (GRULAC) Region

Environmental Science and Technology. WoS

Karina Miglioranza, Isabel Moreno, Gilberto Fillmann, Anita Eng, Cassandra Ruert, Jasmin Schuster, Tom Harner, Beatriz Aristizabal, Luisa Castillo, Oscar Fentanes, Martin Villa Ibarra, **Karla Pozo**

Resumen: A special initiative was run by the Global Atmospheric Passive Sampling (GAPS) Network to provide atmospheric data on a range of emerging chemicals of concern and candidate and new persistent organic pollutants in the Group of Latin America and Caribbean (GRULAC) region. Regional-scale data for a range of flame retardants (FRs) including polybrominated diphenyl ethers (PBDEs), organo-phosphate esters (OPEs), and a range of alternative FRs (novel FRs) are reported over 2 years of sampling with low detection frequencies of the novel FRs. Atmospheric concentrations of the OPEs were an order of magnitude 28 higher than all other FRs, with similar profiles at all sites. Regional-scale background concentrations of the poly- and perfluoroalkyl substances (PFAS), including the neutral PFAS (n-PFAS) and perfluoroalkyl acids (PFAAs), and the volatile methyl siloxanes (VMS) are also reported. Ethyl perfluorooctane sulfonamide (EtFOSA) was detected at highly elevated concentrations in Brazil and Colombia, in line with the use of the pesticide sulfluramid in this region. Similar concentrations of the perfluoroalkyl sulfonates (PFAS) were detected throughout the GRULAC region regardless of location type, and the VMS concentrations in air increased with the population density of sampling locations. This is the first report of atmospheric concentrations of the PFAAs and VMS from this region.

### 2. Contamination Profile of DDTs in the Shark *Somniosus microcephalus* from Greenland Seawaters

Bulletin of Environmental Contamination and Toxicology. WoS

Ondrej Audy, Petra Pribylova, Simonetta Corsolini, Savatore Cotronei, **Karla Pozo**

Resumen: DDT isomers were detected in all the liver and muscle samples of Greenland sharks *Somniosus microcephalus* (n 15) caught in Greenland seawaters. The mean concentrations of DDTs (sum of o,p and p,p DDT, DDD, and DDE isomers) were  $1094 \pm 818$  ng/g lipid weight (lw) in the muscle and  $761 \pm 416$  ng/g lw in the liver. The p,p-DDE accounted for  $48\% \pm 41\%$  and  $53\% \pm 54\%$  of the total DDT residue in the white muscle and liver, respectively. The lipid content was  $48\% \pm 10\%$  in the muscle and  $43\% \pm 17\%$  in the liver. Female sharks showed the highest concentrations of DDTs. The youngest shark showed higher concentrations of DDTs in the liver than the older sharks. To our knowledge, this is one of the few investigations on DDT levels in *S. microcephalus* where concentrations were correlated to lipid.

### 3. Novel Methods Generated by Genetic Programming or the Guillotine-Cutting Problem

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Scientific Programming. WoS

Vittorio Bertolini, Carlos Rey, **Mauricio Sepúlveda**, Víctor Parada

Resumen: New constructive algorithms for the two-dimensional guillotine-cutting problem are presented. The algorithms were produced from elemental algorithmic components using evolutionary computation. A subset of the components was selected from a previously existing constructive algorithm. The algorithms evolution and testing process used a set of 46 instances from the literature. The structure of three new algorithms is described, and the results are compared with those of an existing constructive algorithm for the problem. Several of the new algorithms are competitive with respect to a state-of-the-art constructive algorithm. A subset of novel instructions, which are responsible for the majority of the new algorithms good performances, has also been found.

#### 4. On the meaning of crisis. A network based approach to collective thinking

Transylvanian Review. WoS

J.P. Cárdenas, C. Urbina, G. Vidal, **M. Fuentes**, G. D. Gomez, I. Oliva

Resumen: The collective behavior of highly complex systems is a remarkable emerging property. In social systems, the sense and meaning acquired by a certain phenomenon for a group of people could also be. In this paper we present the results of a social experiment that explores this through a network-based method for the construction of the meaning and collective interpretation of the crisis phenomenon. Our results suggest not only a clear dichotomy in the meaning of the phenomenon that manifests itself at a social level, but also a complex structure emerging from the interaction between different concept associated with it. At one extreme, the crisis is situated and interpreted as a dangerous conflict, at the other, the crisis is understood and interpreted as a transformation that translates into opportunities. The different meanings of the phenomenon seem to respond to some social attributes such as age and professional training.

#### 5. Records of organochlorine pesticides in soils and sediments on the southwest of Buenos Aires Province, Argentina

Environmental Earth Sciences. WoS

Norma Tombesi, **Karla Pozo**, Andrés Hugo Arias Mónica Alvarez, Petra Pribylova, Ondrej Audy, Jana Klánová

Resumen: The present study fills a gap in the knowledge in regards to the occurrence of banned pesticides at both coastal and inland locations at the Southwest Buenos Aires region, Argentina. Superficial sediment and soil samples were collected from different sites along the Bahía Blanca Estuary and surrounding sites to assess the concentration levels and spatial distribution of 12 selected organochlorine pesticides (OCs) 13 spatial locations including inland and shore-coast were sampled to evaluate occurrence and concentration levels of hexachlorocyclohexanes -HCH, -HCH, -HCH, -HCH, dichlorodiphenyltrichloroethane and its degradation products (DDXs: p,p-DDT, o,p-DDT, p,p-DDE, o,p-DDE, p,p-DDD, o,p-DDD) and the polychlorobenzenes PeCB (pentachlorobenzene) and HCB (hexachlorobenzene). After cleaning and extractions steps, samples were analyzed by means of gas chromatography/mass spectrometry. OCs (sum of

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all studied compounds) ranged between 0.206 and 1040 ng g<sup>-1</sup> dw (mean 82.4 and SD 277 ng g<sup>-1</sup> dw). Total HCHs (sum of -HCH, -HCH, -HCH and -HCH) ranged from 0.0858 to 0.876 ng g<sup>-1</sup> dw (mean 0.43 and SD 0.23 ng g<sup>-1</sup> dw), DDXs (sum of p,p and o,p isomers) from 0.080 to 1040 ng g<sup>-1</sup> dw (mean 81.3 and SD 277 ng g<sup>-1</sup> dw). Lower concentrations were found for PeCB (mean 0.095 and SD 0.17 ng g<sup>-1</sup> dw) and HCB (mean 0.56 and SD 1.7 ng g<sup>-1</sup> dw). Principal component analysis (PCA) permitted the extraction of underlying information about common factors, providing an overview of the distribution of pesticides and allowing the characterization of sites in regards to the major pesticide signature.

### **6. The growth of *Pichia pastoris* Mut on methanoglycerol mixtures fits to interactive dual-limited kinetics: model development and application to optimised fed-batch operation for heterologous protein production**

Bioprocess and Biosystems Engineering. WoS

**Christian Canales**, Claudia Altamirano, Julio Berrios

Resumen: The methanoglycerol co-feeding during the induction stage for heterologous protein production in *Pichia pastoris* has shown significant productive applications. Available model analysis applied to this dual-limited condition is scarce and normally does not consider the interaction effects between the substrates. In this work, a dual-limited growth model of *P. pastoris* considering an interactive kinetic effect was applied to an optimised fed-batch process production of heterologous *Rhizopus oryzae* lipase (ROL). In the proposed model, the growth kinetics on glycerol is fully expressed, whereas methanol kinetics is modulated by the cometabolisation of glycerol, resulting in an enhancing effect of glycerol-specific growth rate. The modelling approach of fed-batch cultures also included the methanol volatilisation caused by the aeration that was found to be a not-negligible phenomenon. The model predicts the ability of *P. pastoris* to keep control of the methanol concentration in the broth during ROL-optimised production process in fed batch and fits satisfactorily the specific cell growth rate and ROL production. Implications of interaction effect are discussed applying the general procedure of modelling approach.

### **7. Desarrollo Emprendedor Latinoamericano y sus Determinantes: Evidencias y Desafíos**

Revista de Ciencias Sociales Pilquen. SciELO

**Iván Valenzuela-Klagges, Bárbara Valenzuela-Klagges, Javier Irrarrazabal**

Resumen: El objetivo general de la presente investigación es describir la realidad latinoamericana en relación al desarrollo emprendedor y las variables que están influyendo en dicho proceso. Para ello, se realizó una investigación descriptiva de los últimos estudios y evidencias registradas en la región. El estudio permite concluir que el éxito empresarial se sustenta en la región en mayor medida en emprendedores líderes que poseen educación universitaria y experiencia laboral previa y que posean redes de contacto para percibir oportunidades de negocio, para acceder a recursos, información, financiamiento y para recibir apoyo y asesorías profesionales, en desmedro de canales de apoyo más institucionales. Por lo general, el emprendedor latinoamericano no inicia su proyecto con un plan de negocios y, normalmente, presenta dificultades para gestionar la administración y finanzas de la empresa por falta de conocimientos, provocando en gran medida el fracaso empresarial.

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## FACULTAD DE MEDICINA VETERINARIA

### **1. Comparison of diet digestibility, rumen fermentation, rumen rate of passage, and feed efficiency in dairy heifers fed ad-libitum versus precision diets with low and high quality forages**

Journal of Applied Animal Research. WoS

Lucas Karl Mitchell, Arlyn Judson Heinrichs Sin Facultad, Coleen Mowrey Jones, **Felipe Pino**

Resumen: This study compared ad-libitum versus precision-fed diets with 2 forages and different levels of neutral detergent fibre (NDF) to evaluate rumen fermentation, diet digestibility, feed efficiency, and digesta passage rate. Eight Holstein heifers (18.4 ± 0.6 mo) fitted with rumen cannulas were used in a 2-factor, split-plot, Latin square design. The whole-plot factor was feeding system with ad-libitum or precision feeding and 4 heifers in each plot. The subplot included 2 factors: forage quality and NDF content. Diets were formulated to provide the same energy level (0.234 Mcal of ME intake/kg of empty body weight<sup>0.75</sup> for precision-fed heifers and 110% of previous intake for ad-libitum-fed heifers. Forage quality and NDF level affected dry matter intake. Mean rumen pH was lower for ad-libitum than for precision-fed diets and volatile fatty acid concentrations were affected principally by forage quality. Adlibitum diets showed faster rate of passage for solid feeds and fluids, increased rate of digestion, and shorter retention time in the rumen. In addition, both high NDF and low quality forage modified rumen passage rate and shortened retention time. Feed efficiency was improved in precision-fed heifers.

### **2. Histopathological findings of Fasciola hepatica infection in invasive European hare (Lepus europaeus) in Southern Chile**

Revista Brasileira de Parasitologia Veterinária, WoS

Cristina Alvelo, Manuel Moroni, Pablo Oyarzun-Ruiz, **Frank Vera**

Resumen: Fasciola hepatica is a parasite introduced in America from Europe, being considered of concern for public health and animal production, especially in countries with endemic areas as occur in Chile. In this country, the research has been focused mainly in domestic ruminants, with native and introduced wildlife being largely ignored. Thus, the aim of this study was to report the infection by Fasciola hepatica in an introduced mammal, the European hare, which is distributed along a vast area of the country. One in 42 hares hunted showed histological lesions compatible with F. hepatica, and harbored a parasitic load of 6 liver flukes. This is the first report of this lagomorph acting as host of this helminth in the country and the third in South America. Yet, we found no previous reports regard the pathology of this fluke in the species. Thus, we emphasize the importance of more studies regarding introduced mammals which could be acting as reservoirs for this important fluke.

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## FACULTAD DE MEDICINA Y CIENCIA

### 1. Clinical, Biochemical and Genetic Characteristics of Non-Classical Apparent Mineralocorticoid Excess Syndrome

The Journal of Clinical Endocrinology Metabolism. WoS

Alejandro Martinez-Aguayo, Alejandra Tapia-Castillo, Andrea Vecchiola, Rene Baudrand, **Carlos Lagos**

Resumen: El exceso de mineralocorticoide aparente clásico (AME) es un trastorno recesivo raro, causado por deficiencia de 11-HSD2. AME se manifiesta como hipertensión pediátrica baja en renina, hipocalcemia y alto índice de cortisol / cortisona (F / E). Evaluar la AME no clásica (NC-AME) debido a la insuficiencia parcial de 11-HSD2by su asociación con la hipertensión, la activación del receptor mineralocorticoide (MR) y los parámetros inflamatorios. Reclutamos 127 adolescentes y adultos. Lo sujetos con hipertensión secundaria fueron excluidos. Medimos variables clínicas, bioquímicas, renales, vasculares e inflamatorias. La secuenciación del gen HSD11B2 se realizó en todos los sujetos. La relación F / E sérica se asoció positivamente con la presión arterial sistólica (PAS), la microalbuminuria y la hs-PCR. La cortisona sérica se correlacionó con los parámetros de activación de MR incluso cuando se ajustó por edad, IMC y sexo: cortisona inferior con mayor excreción de potasio ( $r$  -0.29 parcial,  $p$  0.002) y con menor actividad de renina plasmática (ARP,  $r$  parcial 0.29,  $p$  0.001). Consistentemente, identificamos, 9/127 sujetos (7.1%) con alta relación F / E (primer cuartil) y baja cortisona (último cuartil), sugestivos de NC-AME. Estos sujetos tenían una PAS más alta (mmHg):  $141.4 \pm 25.7$  vs  $127.3 \pm 18.1$   $p$  0.03 menor PRA (ng / L \* s):  $0.36 \pm 0.19$  vs  $0.64 \pm 0.47$ ,  $p$  0.0001) y mayor excreción de potasio, microalbuminuria, hs-CRP y PAI-1. Solo encontramos en 2/9 sujetos con NC-AME mutaciones heterocigotas en el gen HSD11B2. Estos hallazgos sugieren un espectro de insuficiencia parcial de 11-HSD2 en una cohorte de atención primaria sin el fenotipo / genotipo clásico de AME. La AME no clásica puede representar un fenotipo de activación de MR y riesgo cardiovascular que sugiere que estos sujetos podrían ser atacados con antagonistas de MR.

### 2. First Latin American clinical practice guidelines for the treatment of systemic lupus erythematosus: Latin American Group for the Study of Lupus (GLADEL, Grupo Latino Americano de Estudio del Lupus) Pan-American League of Associations of Rheumatology (PANLAR)

Annals of Rheumatic Diseases. WoS

Bernardo PonsEstel, Ariel Izcovich, Enrique R Soriano, Federico Popof, Graciela Espada, Juan Criniti, Luis Catoggio, Mercedes Garcia, Emilia Sato, Eloisa Bonfa, Roger Levy, Antonio Iglesias, Claudio Galarza, Leonor Barile-Fabris, Mary Carmen Amigo, Mario Cardiel, Margarita Duarte, Eduardo Acevedo, **Loreto Massardo**

Resumen: Systemic lupus erythematosus (SLE), a complex and heterogeneous autoimmune disease, represents a significant challenge for both diagnosis and treatment. Patients with SLE in Latin America face special problems that should be considered when therapeutic guidelines are developed. The objective of the

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study is to develop clinical practice guidelines for Latin American patients with lupus. Two independent teams (rheumatologists with experience in lupus management and methodologists) had an initial meeting in Panama City, Panama, in April 2016. They selected a list of questions for the clinical problems most commonly seen in Latin American patients with SLE. These were addressed with the best available evidence and summarised in a standardised format following the Grading of Recommendations Assessment, Development and Evaluation approach. All preliminary findings were discussed in a second face-to-face meeting in Washington, DC, in November 2016. As a result, nine organ/system sections are presented with the main findings an overarching treatment approach was added. Special emphasis was made on regional implementation issues. Best pharmacologic options were examined for musculoskeletal, mucocutaneous, kidney, cardiac, pulmonary, neuropsychiatric, haematological manifestations and the antiphospholipid syndrome. The roles of main therapeutic options (ie, glucocorticoids, antimalarials, immunosuppressant agents, therapeutic plasma exchange, belimumab, rituximab, abatacept, low-dose aspirin and anticoagulants) were summarised in each section. In all cases, benefits and harms, certainty of the evidence, values and preferences, feasibility, acceptability and equity issues were considered to produce a recommendation with special focus on ethnic and socioeconomic aspects. Guidelines for Latin American patients with lupus have been developed and could be used in similar settings.

### **3. MII-COMPASS complexes mediate H3K4me3 enrichment and transcription of the osteoblast master gene Runx2/p57 in osteoblasts**

Journal of Cellular Physiology. WoS

Adriana Rojas, **Berta Henríquez**

Resumen: Expression of Runx2/p57 is a hallmark of the osteoblast-lineage identity. Although several regulators that control the expression of Runx2/p57 during osteoblast-lineage commitment have been identified, the epigenetic mechanisms that sustain this expression in differentiated osteoblasts remain to be completely determined. Here, we assess epigenetic mechanisms associated with Runx2/p57 gene transcription in differentiating MC3T3 mouse osteoblasts. Our results show that an enrichment of activating histone marks at the Runx2/p57 P1 promoter is accompanied by the simultaneous interaction of Wdr5 and Utx proteins, both are components of COMPASS complexes. Knockdown of Wdr5 and Utx expression confirms the activating role of both proteins at the Runx2-P1 promoter. Other chromatin modifiers that were previously described to regulate Runx2/p57 transcription in mesenchymal precursor cells (Ezh2, Prmt5, and Jarid1b proteins) were not found to contribute to Runx2/p57 transcription in full-committed osteoblasts. We also determined the presence of additional components of COMPASS complexes at the Runx2/p57 promoter, evidencing that the MII2/COMPASS- and MII3/COMPASS-like complexes bind to the P1 promoter in osteoblastic cells expressing Runx2/p57 to modulate the H3K4me1 to H3K4me3 transition.

### **4. Needle Aspiration as an Occupational Injury**

Archivos de Bronconeumología. WoS

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Erik Folch, Sebastian Fernandez-Bussy, **Gonzalo Labarca**

Resumen: A 31-year old man was seen in the emergency department after reporting aspiration of a sharp object at work. He felt a mild stabbing pain, but no shortness of breath or cough. His job consists of injecting CO<sub>2</sub> gas into impermeable packages that contain chicken. This technique of modified atmosphere packaging is used to prolong shelf-life over traditional ice packing and vacuum packaging. Immediately prior to the aspiration event, he recalled placing the needle in his lips and blow in an attempt to unplug it.

## **5. Nervio Interóseo Anterior: Trayecto, Distribución e Implicancias Clínicas**

International Journal of Morphology. WoS

Celio Sousa-Rodrigues, Celio Sousa-Rodrigues, **Andrés Riveros Valdes**

Resumen: El principal ramo del nervio mediano en el antebrazo es el nervio interóseo anterior (NIA), el cual inerva la mayoría de los músculos del plano profundo del compartimiento anterior del antebrazo. Existen diferentes descripciones sobre el punto de origen y su trayecto del NIA, así como también respecto a ramos comunicantes de este, con otros nervios del antebrazo. Algunas de estas descripciones concuerdan de que el NIA pueda atraparse en su tránsito por los arcos formados en las cabezas de origen de los músculos pronador redondo y flexor superficial de los dedos. El objetivo fue determinar el punto de origen, trayecto, músculos inervados y presencia de ramos comunicantes del NIA con otros nervios del antebrazo. Se utilizaron 30 antebrazos de cadáveres adultos brasileños fijados en formalina pertenecientes al laboratorio de anatomía de la UNCISAL, Maceió, Brasil. El punto de origen del NIA alcanzó un promedio de 46 mm con una desviación estándar de 17,54 mm, distal a la línea biepicondilar. En un 37 % de los casos, este nervio se originó en el tramo existente entre los arcos musculares mencionados y en un 23 % surgió proximal a la ubicación de estos. En todos los casos, el NIA inervó a los músculos flexor profundo de los dedos y pronador cuadrado y en un 93 % también inervó al músculo flexor largo del pulgar. Un caso presentó ramo comunicante entre el NIA y el nervio ulnar. En el 10 % de los casos, presentó la variante muscular cabeza accesoria del músculo flexor largo del pulgar. Todos estos hallazgos deben considerarse al momento de diagnosticar correctamente los diferentes síndromes de atrapamiento que afectan tanto al NIA como al nervio mediano en la región cubital y en el antebrazo. Así mismo, el éxito de procedimientos quirúrgicos de estas regiones está supeditado a un conocimiento detallado del trayecto y distribución de estos nervios.

## **6. Novel Classes of Antibacterial Drugs in Clinical Development, a Hope in a Post-antibiotic Era**

Current Topics in Medicinal Chemistry. WoS

David Vasquez, Jaime Mella, Juan Andrades, **Javier Campanini**

Resumen: Bacterial resistance is a growing problem worldwide and is estimated that deaths by infectious diseases associated with resistant pathogens will generate 10 million deaths per year in 2050. This problem

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becomes more serious due to the low level of research and development of new drugs, which has fallen drastically in the last 40 years. For example, in the last decade of a total of 293 new drugs approved by the FDA, only 9 corresponded to antimicrobial drugs and none constituted a new structural class. The majority of the molecules in the clinical phase II or III, coming from modifications of drugs in clinical use, this strategy makes easier the bacterial susceptibility to generate resistance through the mechanisms expressed for their drug predecessors. Under this scenario, it is urgent to generate the most novel strategies for the development of antibacterial compounds with new targets or mechanism of action, without a structural relationship with the antibiotic drugs predecessors. Under this look, the present review addresses the development of the latest antibacterial drugs in clinical phases II and III, analyzing the design strategies by which these new molecules were obtained and the structure-activity relationship of these new families of antibiotics, in order to define the state of the vanguard antibacterial drugs in the post-antibiotic era.

### **7. The nitrogen fixing specie *Sophora cassioides* (Fabaceae), is nutritionally favored and their rhizosphere bacteria modified when is co-cultivated with the cluster root forming *Embothrium coccineum* (Proteaceae)**

Journal of soil science and plant nutrition. WoS

Alejandra Zuñiga Feest, Angela Bustos-Salazar, Felipe Ramírez, Leyla Diaz, Mabel Delgado, Susana Valle, **Gastón Muñoz**

Resumen: The hypothesis that *Embothrium coccineum*, a species able to solubilize P through cluster roots (CR) carboxylate exudation, makes P more available in volcanic depositions, thus facilitating the growth of other plant species such as the N-fixing *Sophora cassioides* was tested. In this work, seedlings of these two tree species were grown alone or co-cultivated for six months in greenhouse conditions with either pumice, a recent volcanic deposition with low P availability, or an organic commercial mix. Upon analyzing the aboveground growth of the two substrate treatments, we found no clear evidence of facilitation. Despite this, substrate type did influence the relative growth and some characteristics of CR and nodules. On the other side, the number of total soil bacteria, but not *Rhizobium* spp, was greater when *E. coccineum* and *S. cassioides* were grown together than when only one species was grown alone. Nutritional parameters, such as the concentration of nitrogen (N) and phosphorous (P) in roots and total leaf protein content in leaves, indicated that the nutritional content of *S. cassioides* was greater when cocultivated with *E. coccineum* in pumice. Specifically, co-cultivation tended to reduced P limitation and improved N acquisition by *S. cassioides*. Based on these results, our hypothesis is partially accepted.

## FACULTAD DE ODONTOLOGÍA

### **1. Irrigation trends among members of the Chilean Endodontic Society**

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Journal of Oral Research. Scopus

**Hector Monardes, Jaime Abarca, Marcia Antunez,** Daniela Wulf, Daniela Zuñiga

Resumen: The aim of this study is to determine the current trends of irrigation during root canal therapy by specialists who are members of the Chilean Endodontic Society. Materials and Method: A survey (Survey Monkey®-SurveyMonkey.com) was e-mailed to the 485 members of the Chilean Endodontic Society. The instrument was translated and adapted from the survey Irrigation trends among American Association of Endodontists members: A web-based survey applied in the USA in 2012. Participants answered a set of 16 questions that included irrigant selection, irrigant concentration, the adopted protocol, techniques or devices for irrigant activation. Results: 99% of respondents use sodium hypochlorite as the main irrigant. Data indicate that 74% of respondents use hypochlorite at a concentration of 5%. Most respondents (94%) also include EDTA in their usual practice. In addition, 90% of respondents reported that they activate the irrigating agent, and 94% confirmed that they perform a final irrigation protocol. Conclusion: The majority of respondents use sodium hypochlorite as the main irrigant at a concentration of 5%, use ethylenediaminetetraacetic acid (EDTA) as a smear removal agent, activate the irrigant, and perform a final irrigation protocol.

## **2. Relación entre estrés estudiantil y reprobación**

Salud Uninorte, Scopus

**Diego Rodriguez Alvarez, Jose Mauricio Parra, Maria Paz Rodriguez,** Victor Diaz Narvaez

Resumen: Correlacionar el nivel de estrés académico versus tasa de reprobación de los estudiantes de 4º año de la carrera de Odontología de la Universidad San Sebastián, sede Santiago. Materiales y métodos: Se aplicó el inventario de estrés académico Sisco a los estudiantes que cursaban en forma regular el 4º año, 2015. Este instrumento permite identificar el nivel de estrés, los estímulos reconocidos como estresores, reacciones físicas, reacciones psicológicas, reacciones comportamentales, y estrategias de afrontamiento. El cuestionario fue aplicado poco antes de finalizar el segundo semestre 2015. Una vez cerradas las asignaturas, se confrontaron las respuestas de los estudiantes que aprobaron versus los que reprobaron el año académico. Resultados: Todos los estudiantes presentaron estrés, el 90 % de ellos lo presentó siempre, o casi siempre. Los estudiantes que reprobaron el año académico 2015 mostraron mayores niveles de estrés que los estudiantes que sí aprobaron el año académico. Por su parte, las mujeres se mostraron más estresadas que los hombres. En ninguno de los casos expuestos se encontró diferencia estadísticamente significativa. Conclusiones: El nivel de estrés académico no es determinante en la aprobación de asignaturas.

# FACULTAD DE PSICOLOGÍA

## **1. Analysis of Creative and Identity Processes among Mapuche Women Weavers in the Araucanía Region**

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Integrative Psychological and Behavioral Science. WoS

**Ramiro Gonzalez**, Pedro Mege

Resumen: The Mapuche practice of weaving has occupied a transcendental role for this community in its system of symbolic representation. These textiles involve different elements of cultural identity for the community, for the wearers of the garments and, most of all, for their creators. This article analyzes the creation context in which the Mapuche textile tradition brings into tension different aspects of cultural identity and innovation within the construction of cultural memory. It examines two principal scenarios that arose from ethnographic work: 1) selection of materials 2) preparation and fabrication. The findings show that, in both scenarios, the new rules emerging from religious and commercial concerns in the present-day context of these weavers are linked with the diverse positions taken by each woman. We discuss how these new rules are associated with different processes of cultural identity in this group of Mapuche women.

## **2. Social Inequality and Mental Health in Chile, Ecuador, and Colombia**

Latin American Perspectives. WoS

Loreto Villagrán, Pamela Vaccari, Luz Dary Gallardo, Carlos Reyes, **Yanet Quijada**

Resumen: The results of a comparative study of social inequality and mental health show that Chile and Colombia, which have enormous social gaps despite their economic growth, are characterized by poor mental health indicators and social discontent, while the better equity indicators in Ecuador are not clearly linked to mental health. The concept of social defeat is suggested as a mediator between social inequality and individual and collective mental health, and participation and empowerment are suggested as ways of improving social well-being.

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