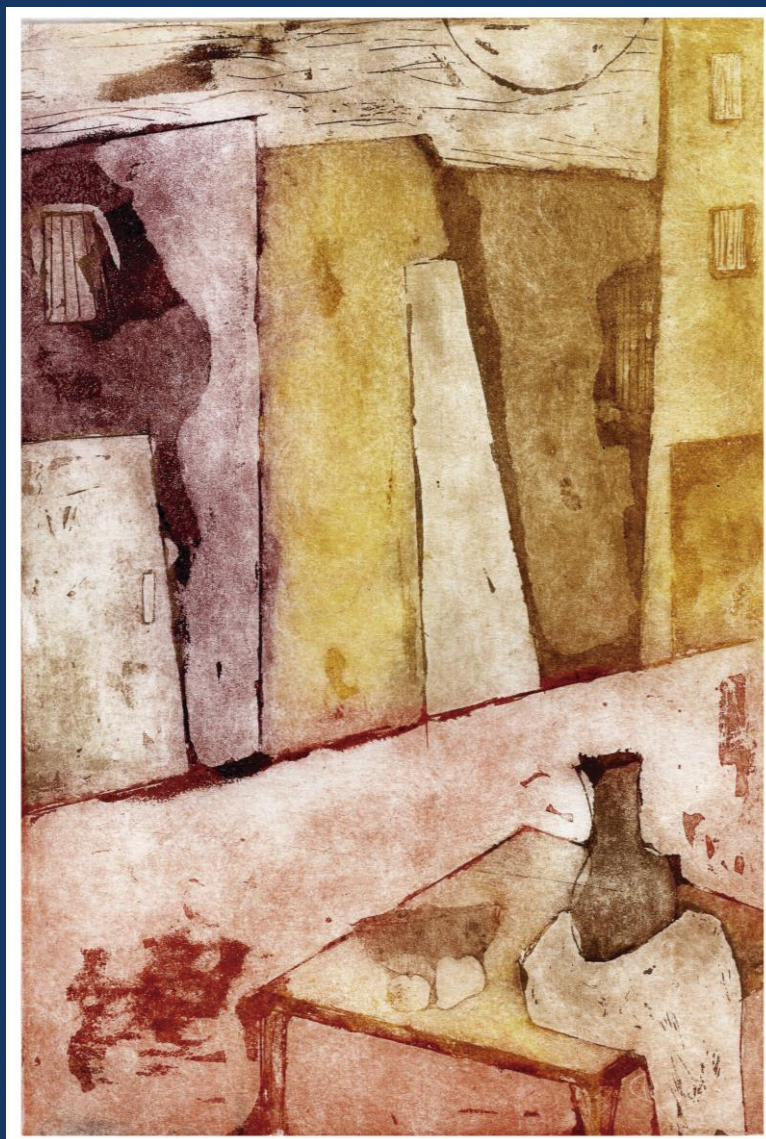


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Antonella Ricagni

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**IX Reunión Anual de la
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**VI Reunión Científica Regional de la Asociación Argentina de Ciencia y
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**con la participación de
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13 - 16 de noviembre de 2019
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Asociación Argentina de Nanomedicinas
(NANOMED-ar)**

**VI Regional Scientific Meeting of Asociación Argentina de Ciencia y
Tecnología de Animales de Laboratorio (AACyTAL)**

**with the participation of
The Histochemical Society**

November 13th – 16th, 2019
Hotel 13 de Julio - Mar del Plata

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LA TAPA

Antonella Ricagni. **Atardecer en la calle**

Técnica: Aguatinta /aguafuerte. Año 2011. Medidas: 21 x 29 cm. Gentileza del autor.

Antonella Ricagni es Licenciada en Artes Visuales, con orientación en Grabado. Ha ejercido la docencia en Artes Plásticas en el nivel primario. Trabajó en varios museos como orientadora de sala y tallerista. Es escenógrafa egresada de la Escuela Metropolitana de Arte Dramático (EMAD). Ha realizado una residencia artística en México especializada en Xilografía.

Actualmente es docente en la materia Ilustración, en la carrera de Diseño Gráfico en la Facultad de Arquitectura, Diseño y Urbanismo, Universidad de Buenos Aires, y en Plástica y Tecnología en varias instituciones educativas en la ciudad de Buenos Aires.

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completely prevented the fructose-induced decrease in all of these parameters. Additionally, possible changes in the expression of the two major transcription factors involved in osteogenic and adipogenic differentiation, Runx2 and PPARgamma, as well as characteristic differentiation markers such osteocalcin and dentinsialoprotein, were evaluated by RT-PCR. It was found that DPPC-F presented a lower Runx2/PPARgamma ratio than de DLPC-C, whereas DPPC-CM and DPPC-FM presented similar values of ratios than control. At last, the expression of osteo/odontogenic markers decreased in DPPC obtained from group F, while treatment with metformin partially prevents these effects. These results confirm that the fructose-induced MS in rats decreases the proliferative and osteo/odontogenic potential of dental pulp progenitor cells. They also show that these deleterious effects can be completely or partially prevented by prolonged treatment with oral metformin.

0282 - MITOCHONDRIAL PHOSPHOENOLPYRUVATE CARBOXYKINASE IS EXPRESSED IN PP- BUT NOT BETA-CELLS FROM HUMAN PANCREATIC ISLETS

Ahilyn ESCOBAR(1) | Fernando MARTÍNEZ(1) | Francisco WESTERMEIER(2) | Rodrigo GATICA(3) | Francisco NUALART(1) | **Romina Paola BERTINAT** (1)

UNIVERSIDAD DE CONCEPCION (1); FH JOANNEUM GESELLSCHAFT MBH UNIVERSITY OF APPLIED SCIENCES, INSTITUTE OF BIOMEDICAL SCIENCE (2); ESCUELA DE VETERINARIA, FACULTAD DE CIENCIAS, UNIVERSIDAD MAYOR (3)

Abstract/Resumen: Mitochondrial phosphoenolpyruvate carboxykinase (M-PEPCK) is a cataplerotic enzyme that positively modulates glucose-stimulated insulin secretion in rodent beta-cells. However, M-PEPCK expression has not been addressed in human beta-cells. We hypothesized that M-PEPCK is expressed in human beta-cells, and used immunohistochemical techniques to prove it, comparing with rodent pancreas. For this end, pieces of pancreas from Sprague Dawley male rats, C57BL/6 beta-cell-ablated male mice, and cancer patients were fixed in formalin. Multiple immunofluorescence analysis of M-PEPCK and hormones specifically secreted by each cell population in the Langerhans' islets revealed the expression of M-PEPCK in insulin-producing beta-cells in both rat and mouse pancreas, as previously reported. However, we detected higher levels of M-PEPCK immunoreactivity in another endocrine cell population: PP-cells that secrete pancreatic polypeptide (PP). In fact, the same analysis in beta-cell-ablated mice (due to exclusive expression of human receptor for diphtheria toxin in beta-cells, and death of beta-cells upon treatment of mice with diphtheria toxin) showed that M-PEPCK reactivity and co-localization with PP is still high in the pancreas lacking beta-cells. Most significantly, we observed that M-PEPCK co-localizes with PP but not with insulin in biopsies from cancer patients. We conclude that M-PEPCK is not expressed in beta-cells from human pancreas, suggesting that extrapolation of data about M-PEPCK function in rodent pancreas should be reconsidered. In contrast, higher levels of M-PEPCK in PP-cells from both human and rodent pancreas suggest that this enzyme plays a role in PP secretion. This is the first study where the expression of M-PEPCK is addressed in human pancreas. Further studies are needed to understand M-PEPCK contribution to PP-cell metabolism. We postulate that M-PEPCK modulates PP production and/or secretion, contributing to nutrient homeostasis. This hypothesis is currently under investigation.

0288 - THE HYPOTHALAMIC EXPRESSION OF GONADOTROPIN-RELEASING HORMONE IS MODULATED BY THE COMBINED ACTION OF GLUTAMATE AND ESTRADIOL IN THE SOUTH AMERICAN PLAINS VIZCACHA (LAGOSTOMUS MAXIMUS).

Victoria FIDEL | Pablo Ignacio Felipe INSERRA | Sofia PROIETTO | Santiago Andrés CORTASA | Alejandro Raúl

SCHMIDT | María Clara CORSO | Alfredo VITULLO | Julia HALPERIN | Verónica Berta DORFMAN

CENTRO DE ESTUDIOS BIOMÉDICOS, BIOTECNOLÓGICOS, AMBIENTALES Y DE DIAGNÓSTICO-UNIVERSIDAD MAIMÓNIDES

Abstract/Resumen: *Lagostomus maximus* shows peculiar reproductive features like reactivation of the reproductive axis during pregnancy with follicular recruitment and ovulation. Previously, we showed that hypothalamic expression of gonadotropin-releasing hormone (GnRH) of vizcacha correlates with serum estradiol (E2), estrogen receptors (ER) and N-methyl-D-aspartic acid receptor (NMDAR) expression during gestation. In addition, we observed that glutamate (GLU) down regulates GnRH delivery through NMDAR. Here we investigated the interaction between E2 and NMDA over GnRH expression in the hypothalamus of vizcachas in order to analyze their role on GnRH expression during gestation. We developed two approaches: 1- Hypothalamic explants of non-pregnant adult female vizcachas incubated with: a) GLU with or without (\pm) GLU receptors antagonists, b)NMDA \pm NMDA-R antagonist CGP, c) E2 \pm ERa or ERb antagonists, d) E2 \pm NMDA \pm CGP. GnRH mRNA levels were studied by RT-PCR; n=5/group. 2- Non-pregnant adult vizcachas ovariectomized (OVX) and treated with E2 (5 ug/kg); n=5/group. GnRH and NMDAR1 hypothalamic expression was evaluated by immunohistochemistry. We determined significant induction of GnRH mRNA expression by E2 and REa agonist related to control and REb agonist ($p < 0.01$). In the contrary, we observed a significant decrease in GnRH mRNA levels induced by NMDA, and it was canceled by CGP ($p < 0.005$). The combination of E2 with NMDA did not induce significant changes. On the other hand, hypothalamic protein expression of GnRH and NMDA showed significant increments of both neuromodulators in arcuate nucleus and medial eminence of OVX+E2 related to OVX and SHAM ($p < 0.05$). These results suggest that GnRH expression is modulated by the combined action of E2 and GLU with opposite effects. This could represent a fine system of regulation of hypothalamic function over the reproductive axis of the female vizcachas. Supported by Fundación Científica Felipe Fiorellino, CONICET-PIP110/14 and MINCYT-PICT1281/2014 grants.

0297 - SIMILAR EFFECTS OF ESTRONE AT VASCULAR AND BONE TISSUES: ¿RISK OR BENEFIT?

María Carla CRESCITELLI | María Belén RAUSCHEMBERGER | Virginia MASSHEIMER

INBIOSUR, DEPARTAMENTO DE BIOLOGÍA, BIOQUÍMICA Y FARMACIA, UNS-CONICET

Abstract/Resumen: It is known that the decrease in estrogen levels during menopause negatively affects bone tissue and vascular function. We have previously shown that E₁ modulates the cellular events involved in atherogenesis such as vascular smooth muscle cells (VSMC) proliferation and migration, and monocyte/platelet adhesion to endothelium. Vascular calcification represents the advanced stage of atherogenesis, where VSMC transdifferentiation on bone like cells plays a crucial role. The aim of this work was to compare the effect of 10 nM E₁ (48 h) on murine calvarial osteoblasts (OB), and on vascular smooth muscular cells transdifferentiated into osteoblasts (VSMC-OB) by incubation in a procalcification medium (10 mM glycerophosphate) for 21 days. We focused our attention on cell differentiation. E₁ increased cell proliferation on both cellular types, either using MTT assay (39 vs. 27% a/each C, OB vs. VSMC-OB, $p < 0.05$) or cell counting technique (41 vs. 28 % a/each C, $p < 0.05$; OB vs. VSMC-OB). On OB, E₁ treatment stimulated ALP activity (4.64 ± 0.32 vs. 3.37 ± 0.25 ; E₁ vs C; $\times 10^{-2}$ IU/mg prot., $p < 0.001$), calcium deposition (40.2% a/C, $p < 0.05$; alizarin red staining) and collagen in extracellular matrix visualized by Sirius red staining (21% a/C, $p < 0.05$). Similar results were obtained when CMLV-OB cells were employed. E₁ enhanced ALP activity (3.72 ± 0.25 vs. 3.00 ± 0.14 ; E₁ vs. C,

10^{-2} IU/mg prot, $p < 0.001$) and the number and size of calcification nodules in extracellular matrix (56 % a/C, $p < 0.05$). Simultaneously, E₁ decreased calcium content in culture medium (735.0 ± 30.5 vs. 468.2 ± 21.1 ; C vs. E₁, $\mu\text{g Ca/mg prot.}$, $p < 0.001$). Indeed E₁ enhanced extracellular collagen deposition in CMLV-OB cells (19 % a/C, $p < 0.05$). The results presented in this work show a similar action of E₁ in both cellular systems. The data suggest an opposite physiological relevance: a beneficial action at bone level favouring osteoblastogenesis and, a deleterious one at vascular homeostasis, promoting vascular calcification.

0308 - ESTROGEN RECEPTOR AND ENDOTHELIAL DYSFUNCTION

María Ivone VALLE (1) | María Belén RAUSCHEMBERGER(1) | W ESPECHE(2) | M SALAZAR(2) | R PLUNKETT(3) | Virginia Laura MASSHEIMER(1)

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Abstract/Resumen: Estrogen receptor (ER) plays key role on vascular homeostasis. Alterations of ER signaling could conduct to vascular dysfunction, impairment of angiogenesis and platelet aggregation and activation. Preeclampsia (PE) is a pregnancy disease that exhibits these features. We have previously reported that the ER activation by estrone (E₁), second natural estrogen, stimulates vasodilators synthesis (NO and PGI₂) and inhibits platelet aggregation. This work presents basic (1) and clinical (2) results about the association of ER and vascular dysfunction. 1) Endothelial cells (EC) were incubated with E₁ 10 nM for 24 h. (2) We tested the existence of association between polymorphisms of ESR1 with PE in a high-risk pregnant women population. Polymorphic variants were studied by RFLP-PCR, employing PvuII and XbaI and resolved by electrophoresis in agarose gels. The in vitro treatment of EC with E₁ shows that the hormone stimulated EC growth (91 % a/C, $p < 0.001$) and VEGF synthesis. ICI 182780 (RE antagonist), suppressed E₁ action. In pregnancy women, the frequencies determined by PvuII was 29 % 1 (C/T); 59 % 2 (T/T) and 12 % 3 (C/C). When XbaI was used the distribution was 35.3 % A (A/G); 2 % B (A/A) and 62.7 % C (G/G). The main haplotype determined was 2C. In contrast, in young women without PE risk the main was 1A. PE pregnant women exhibits a significant reduction in plasmatic NO levels respect to the whole pregnant population (0.15 ± 0.024 vs. 0.29 ± 0.040 mM NO/plasma resp.) Results shows that E₁ and ER have relevant action on cellular processes involved in endothelial dysfunction. Since the distribution of ER genotypes is different among young women with and without risk of endothelial dysfunction, it could suggest a possible clinical utility of these markers as PE risk predictors.

0403 - ONCOGENIC POTENTIAL OF PROLONGED GH-ADMINISTRATION IN ADULT MICE LIVER

Nadia Sofía CICCONI | Magalí Cecilia CERCATO | Julieta Rocio CEBRON | Mariana Andrea BOJORGE | Lorena GONZALEZ | Johanna Gabriela MIQUET | Ana Isabel SOTELO

INSTITUTO DE QUÍMICA Y FÍSICOQUÍMICA BIOLÓGICA (IQUIFIB) UBA-CONICET

Abstract/Resumen: Growth hormone (GH) is given to children with growth impairment and to adults under catabolic states, even if they are not GH-deficient. Chronic exposure to elevated GH levels induces pro-oncogenic liver pathology; GH-overexpressing transgenic mice develop liver tumors at advanced ages. We had evaluated the effect of 5-week GH-treatment, given with the hepatic tumor inductor diethylnitrosamine (DEN), on tumor formation in growing male mice liver. GH did not promote tumor formation, nor did GH given with DEN increase

the number of hepatic lesions in growing mice. The aim of this study was to assess if the same prolonged GH pharmacological treatment would induce any alterations when given to 5 month-old mice. Livers (n= 7-9) were collected at 48 weeks of age and visually inspected. GH-treatment alone did not induce visible lesions. DEN treatment induced liver tumor formation, whereas combination with GH did not promote further tumor development. Microscopical evaluation revealed that only DEN-treated groups exhibited dysplastic foci, although non-significant differences were attained with GH-treatment. The number of hepatocytes per microscopic field was increased in the dysplastic foci compared to the surrounding tissue ($p < 0.05$), denoting smaller cell size. Mice treated with GH exhibited a significantly lower hepatocyte count per microscopic field ($p < 0.05$), indicating cell enlargement, regardless of DEN treatment. Proliferating cell nuclear antigen (PCNA) was determined by immunohistochemistry to assess hepatocellular proliferation. GH-treated groups exhibited a non-significant increase of PCNA positive nuclei. Increased cell proliferation was also observed inside dysplastic foci, although differences were significantly only for animals that did not receive GH treatment ($p < 0.05$). Therefore, similar to that observed in growing mice, prolonged GH-administration to adult mice per se does not promote tumor formation, nor is it fostered by tumor inductor adjuvant treatment.

0585 - BENZOPHENONES 2 (BP2) AND 3 (BP3) AFFECT CELLULAR ADAPTIVE RESPONSES IN THE PANCREATIC BETA CELL LINE MIN6B1 IN THE PRESENCE OF THE AUTOPHAGY INHIBITOR CHLOROQUINE

Florencia SZULAK | Marina Olga FERNANDEZ | Damasia BECU DE VILLALOBOS | Eleonora M. SORIANELLO

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Abstract/Resumen: Benzophenones used as ultraviolet light blockers in plastic packaging of food and in sunscreens, are considered endocrine disruptors. In addition, autophagy is a mechanism of degradation and recycling of cellular components essential for cell homeostasis. In pancreatic beta cells autophagy has a fundamental role in relieving endoplasmic reticulum (ER) stress caused by misfolded proteins, including insulin. Our research focused on studying the effect of BP2 and BP3 on mouse pancreatic beta cell line MIN6B1 function in the presence of the autophagy inhibitor Chloroquine (CQ). The results showed that basal insulin secretion was inhibited by the lysosomotropic compound CQ (10 μM), and also by BP3 (10⁻⁵ M) both when incubated alone and in the presence of CQ. In addition, CQ triggered an adaptive response involving induction of genes related to lysosomal biogenesis, Lamp2, or autophagy, Sqstm1/p62. Interestingly, BP3 significantly reverted the induction of Lamp2 and showed a strong tendency to counteract the induction of Sqstm1/p62 by CQ, in addition to decreasing the mRNA levels of the autophagy marker Ulk1 both basally and in the presence of CQ. BP2 (10⁻⁵ M) only reverted the induction of Lamp2. Interestingly, these effects failed to alter the protein levels of LC3II or SQSTM1/p62, or the autophagic flux itself. Regarding ER stress markers, BP3 decreased the transcription of Xbp1 and its spliced form, and counteracted the induction of Chop and Grp78/Bip triggered by CQ. Likewise, BP2 partially reverted the induction of Grp78/BIP mRNA by CQ. We conclude that benzophenones, mainly BP3, and to a lesser extent BP2, counteract adaptive responses related to autophagy, lysosomal biogenesis and reticulum stress, in a condition of lysosomal stress and autophagy block caused by CQ. Since BP3 also inhibited basal insulin secretion, we suggest that both BP2 and BP3 alter the function of the pancreatic beta cell.

Supported by CONICET, ANPCyT, Fund. Rene Baron and Fund. Williams grants.

0642 - BLOCKING GABAB RECEPTORS (GABABR) FROM BIRTH TO WEANING INDUCES PROFOUND