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Argentine Society for Biochemistry and Molecular Biology

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and with UFA content similar to detected in the parental strain (9.8% and 11%, respectively), although distributed mainly in PG. When the mutant strain was exposed to TTAB, the *P* value was 0.14, the UFA content increased (16.5%) and the amount of viable cells decreased from 10^{12} ufc ml^{-1} to 10^{6} ufc ml^{-1}, demonstrating that the fluidizing effect of surfactant cannot be counteracted. The set of results indicate that an adequate level of CL is indispensable in the cell's response to TTAB

LI-P13
LIPID PROFILE IN BRAIN MITOCHONDRIA DURING DEVELOPMENT: SEXUAL DIFFERENCES

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During perinatal development, testosterone (Te) released by male testes has organizational functions responsible for sexual differences in mce adult brain. As neuronal remodeling during this period depends on mitochondrial metabolism, we studied mitochondrial lipid composition during postnatal development and it relationship with Te. We used C57BL/6 pregnant dams to separate pups by sex at postnatal day 0, 2, 4, 6, 8 and 10. At each time point we obtained blood samples and mitochondrial fraction (MF) from cerebral cortex. Plasma Te levels were measured by RIA, total lipids from MF were extracted, phospholipids (PL) separated by 2D-TLC and fatty acid composition quantified by c-GLC. We found a sex-independent variation of PC, PE and CL content during the analyzed period. In particular, CL, showed a differential fatty acid (FA) profile within sex, it unsaturation index (UI) is higher in males than in females at PND 0 and 2, due to the higher content of 20:4 and 22:6. The UI correlated well with Te levels (r2=0.76). We confirm that the differences in cardiolipin FA composition were due to a difference in Te levels androgenizing females with Te propionate (100 µg of 2 mg/mL in corn oil) at PND 0. The sexual dimorphism we have found would be relevant for understanding the long-lasting deleterious effects in brain of the exposure to endocrine disruptors during development.

LI-P14
EXPRESSION OF FATTY ACID ELONGASES IN CELLS OF THE SEMINIFEROUS EPITHELIUM

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Fatty acid elongases play a crucial role in the biosynthesis of long-chain polyunsaturated fatty acids (PUFA) and in their further elongation to very long chain (VLC) PUFA. Male rat germ cell membranes contain glycero-phospholipids with C18-C24 PUFA and sphingolipids with C26 to C32 PUFA. In the present study, the expression of seven members of the *Elovl* (elongation of very long chain fatty acids) gene family that encode elongases was surveyed in pachytene spermatocytes, round spermatids and Sertoli cells. The mRNAs of *Elovl1*, *Elovl2*, *Elovl4*, *Elovl5*, and *Elovl6* were detected in all of these cells , all of them lacked *Elovl3* expression, and *Elovl7* was expressed only in the latter. As the ELOVL4 protein was previously shown to be responsible for the elongation of >C24 PUFA in the retina, the expression of this protein was also evaluated. During postnatal development, ELOVL4 was not detectable in testis up to P21, i.e., its time of appearance concurred with that of the first spermatocytes. Thereafter, the protein was evidently present in spermatocytes and spermatids, and was also faintly detected in Sertoli cells. As *Elovl2* and *Elovl5* are essential to form PUFA, and *Elovl4* is required to elongate them, the joint expression of these elongases in spermatocytes and spermatids implies that they are functionally related, probably acting in sequence to produce the VLCPUFA of sphingolipids. This work was partially supported by Fondecyt 1140758(JRG).

LI-P15
A53T α-SYN REGULATES TRIACYLGLYCEROL CONTENT IN DOPAMINERGIC NEURONS EXPOSED TO OXIDATIVE STRESS

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Iron-induced oxidative stress and pathological α-synuclein (α-syn) aggregation contribute to the loss of dopaminergic neurons in Parkinson Disease (PD). In this work, we characterized the status of lipid metabolism in N27 dopaminergic neurons and in neurons stably expressing A53T α-syn (a dominant mutation found in familial early onset PD) exposed to iron-induced injury. N27 dopaminergic neurons incubated with iron for 24 hs (Fe, 1mM) displayed increased levels of reactive oxygen species (ROS), lipid peroxidation and elevated plasma membrane

permeability. A different lipid acylation profile was observed in fatty acid prelabeled N27 neurons exposed to Fe. [3H] arachidonic acid (AA) uptake was increased in triacylglycerols (TAG) whereas the incorporation of [3H] oleic acid into TAG showed no changes. AA incorporation increased in phosphatidylcholine and diminished in phosphatidylserine and phosphatidylinositol. Coincidently, TAG content was 40 % higher in Fe-exposed neurons than in controls. The accumulation of TAG was also observed by the appearance of Nile red positive lipid bodies. On the contrary, A53T α-syn neurons exposed to iron-injury showed no increase in TAG levels and diminished ROS content. Our results suggest that TAG accumulation could be a mechanism for AA storage and that α-syn could act as an iron scavenger during oxidative stress in dopaminergic neurons.

LI-P16
THE ORIGIN OF METAZOAN LIPOATE METABOLISM CAN BE TRACED BACK TO HOLOZOAN PROTISTS

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As cofactor in the glycine cleavage system and in several oxoacid dehydrogenases, lipoate is an essential component for the cell. There are multiple strategies in Nature to assure its acquisition. We have explored the presence of the enzymes involved in lipoate synthesis and/or salvage in the protozoan Capsaspora owczarzaki, a symbiont of Biomphalaria snails (vector of the human parasites Schistosoma spp.). Capsaspora was recently highlighted as a model organism to study the origin of multicellularity in Metazoan. Phylogenetic analysis carried out on these enzymes and those from other interrelated pathways, like Krebs cycle and mitochondrial fatty acid synthase system, are all in concordance with the closeness relationship of Capsaspora and other holozoan organisms, like choanoflagellates and metazoans and with a more distant relationship to fungi, together to which they share the Opistokonta. The fact that humans and Capsaspora share similar pathways for lipoic acid acquisition makes this protozoan model very attractive in the study of metabolic defects associated to severe clinical traits in humans.

LI-P17
EUCALYPTOL AND LINALOOL: MECHANISMS UNDERLYING THEIR ANTIPROLIFERATIVE EFFECTS ON HUMAN TUMOR CELLS

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Eucalyptol (Eu) and linalool (Ln) are natural isoprenoids with multiple effects on the mevalonate pathway (MP), a branched pathway essential for cholesterol synthesis and cell proliferation. In previous studies we demonstrated that Eu and Ln were capable of inhibiting cell proliferation in human liver (HepG2) and lung (A549) carcinoma cells. We herein studied the mechanisms involved in those inhibitory effects. Eu and Ln impaired HMG-CoA reductase (HMGCR, the rate-limiting enzyme in the MP) levels , however, the addition of exogenous mevalonate (the HMGCR product) was unable to restore cell growth. Cell cycle analysis showed a G0/G1 arrest produced by Eu and Ln in HepG2 and A549 cells. IC50 of Ln induced apoptosis in HepG2 cells as determined by caspase-3 activity and TUNEL assays, whereas at higher concentrations Eu and Ln triggered apoptosis in both cell types. Ras translocation to the membrane was inhibited by Ln without altering total Ras levels. Our results suggest that in our conditions Eu and Ln at their IC50 exert antitumor activity by inhibition of cell cycle progression in both cell types, meanwhile Ln is also able to induce apoptosis in HepG2 cells. HMGCR inhibition alone is not responsible for the antiproliferative activity of Eu and Ln. The inhibition of Ras translocation to the membrane could be one of the reasons for cell cycle arrest and apoptosis induction.

LI-P18
SYNERGISM OF *Lippia alba* ESSENTIAL OILS WITH STATINS IN ANTIPROLIFERATIVE AND HYPOLIPOGENIC EFFECTS

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Lippia alba (Miller) N.E. Brown is an aromatic shrub which has many chemotypes (CHMs) used in folk medicine. Its essential oil (EO) has a large number and variety of monoterpenes (Mts). Mts have shown to inhibit tumor cell proliferation (CP). This event as well as potential lipid lowering effect is associated with the action exerted by Mts in