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CONGRESO SAIB 2023

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Golgi apparatus in the F zone but acquired a vesicle-like distribution compatible with lipid droplets in the N zone. We further evaluated the SK1 effect on EMT and found that SK1 inhibition also prevented changes in EMT markers, as observed for SK2 inhibition. Interestingly, we found that SK1 inhibition blocked SK2 redistribution, which suggests SK1 involvement in SK2 mobilization. Similar results were observed when S1PR2 was inhibited. These results suggest that the relocalization of SK2 is a central event in EMT and depends on previous S1PR2 activation by S1P synthesis by SK1. These findings highlight the versatility and complexity of sphingolipids in cellular fate determination.

Keywords: Epithelial-mesenchymal transition, Sphingosine-1-phosphate, Sphingosine kinase 2, Epithelial renal cells
Methods: Fluorescent microscopy, Cell culture, Fluorescent proteins, Western Blot

LI-04

EXPRESSION OF GENES INVOLVED IN TESTOSTERONE AND 17β-ESTRADIOL PRODUCTION IN EX VIVO CULTURED PREPUBERAL MOUSE TESTES

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A highly efficient testicular culture system involving a gas-liquid interface has emerged. This method has demonstrated the ability, although a low rate, to differentiate male germ cells from neonatal spermatogonia to haploid cells. However, the model requires thorough examination to facilitate forthcoming experimental approaches in physiological and toxicological reproductive studies. Sequential male germ cell proliferation and differentiation requires the production and the action of steroid hormones. Consequently, our aims were to record production levels of testosterone (Tes) and 17β-estradiol (E2) and to examine the expression of genes encoding proteins that are involved in such hormone production in *ex vivo* cultured testes. The mRNA expression patterns of 17β-Hydroxysteroid dehydrogenase 1 (*17β-Hsd1*), 3β-Hydroxysteroid dehydrogenase (*3β-Hsd1*), Sex hormone binding globulin (*Shbg*) and Cytochrome P450-Aromatase (*Cyp19a1*) were followed in 6.5 days old C57BL/6J mouse testis explants cultured during 44 days and were compared to those recorded during in vivo

development. Notoriously, *17β-Hsd1* and *3β-Hsd1* had a similar expression pattern *ex vivo vs. in vivo*, but the levels of Tes decreased from 5 to 20 days in culture and thereafter remained low. Concomitantly, the mRNA expression of *Shbg* was up-regulated with time in the explants, linked to the low Tes production. Finally, as *in vivo*, *Cyp19a1* expression tended to increase from days 10 to 30, while the E2 levels recorded from 15 to 20 days were the highest. The latter was associated with the appearance of haploid spermatids. Interestingly, when retinoic acid was added to the media, the levels of Tes were increased and mRNA expression levels of *17β-Hsd1* and *3β-Hsd1* were up-regulated, while those of *Shbg* were down-regulated. Our results demonstrated active production of steroid hormones in the explants and suggest that modulation of these hormones could enhance the *ex vivo* spermatogenesis process. Supported by SGCyT UNS-PGI-UNS [24/B272 to GMO], FONCyT, [PICT2020- 02056 to GMO] and SGCyT UNS-PGI 24/B341 to GMO and JML.

Keywords: Steroid hormone, testosterone, spermatogenesis, estrogen
Methods: qPCR, Microscopy, histology, Eclia

LI-05

DEVELOPING AN ORTHOGONAL SYSTEM FOR PRODUCING TARGETED LIPID COMPOUNDS IN MICROORGANISMS

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Oleochemicals are described as a category of aliphatic compounds industrially derived from oils and waxes, of vegetable or animal origin. These products are classified according to the length of the carbon chain, their reduction state (aldehyde, ester, alcohol, alkane) and their modifications (unsaturation, hydroxylation). These chemical characteristics dictate the value and uses of each oleochemical, which range from biofuels, detergents, lubricants, industrial surfactants, to medicines and personal care products. This diversity of applications, and particularly the production of biodiesel, is driving the continued growth of the oleochemical industry. In particular, the majority of fatty acids (FA) present in commercial vegetable oils are classified as linear and long-chain (≥C16), whereas natural sources of medium-chain lipids (C8-C12) are less common (with the exception of some oils such as coconut and palm kernel oil). In this context, the "low structural diversity" of the FA constituents of common commercial oils gives metabolic engineering an important role to play, generating and providing concrete solutions, not only in terms of the performance of the compounds in their various applications, but also in relation to their renewable and food-independent origin. Industrial