SAIB Sociedad Argentina de Investigaciones en Bioquímica y Biología Molecular

CONGRESO SAIB 2023

LIX Annual Meeting of the Argentine Society for Biochemistry and Molecular Biology Research (SAIB)

MEMBERS OF THE SAIB BOARD

Eduardo Ceccarelli
President
CONICET - Universidad Nacional de Rosario

María Elena Álvarez
Vicepresident
CONICET - Universidad Nacional de Córdoba

María Isabel Colombo
Past-President
CONICET - Universidad Nacional de Cuyo

Federico Sisti
Secretary
CONICET - Universidad Nacional de La Plata

Germán Rosano
Treasurer
CONICET - Universidad Nacional de Rosario

Paula Casati
Prosecretary
CONICET - Universidad Nacional de Rosario

Alex Saka
Protreasurer
CONICET – Universidad Nacional de Córdoba

Claudia Banchio
Auditor
CONICET - Universidad Nacional de Rosario

Matías Asención Diez
Auditor
CONICET – Universidad Nacional del Litoral

DELEGATES OF SCIENTIFIC SECTIONS

Cell Biology
Pablo Aguilar
CONICET – Universidad de Buenos Aires

Lipids
Martín Oresti
CONICET - Universidad del Sur

Microbiology
Hebe Dionisi
CONICET

Plants
Elina Welchen
CONICET – Universidad Nacional del Litoral

Signal Transduction
Graciela Boccaccio
CONICET

fermentation of microorganisms using sustainable substrates is therefore a viable and attractive alternative. Specifically, with regard to the production of oleochemicals in microorganisms, progress has been made mainly in the discovery of metabolic pathways involved in lipid synthesis, in the elucidation of key regulatory points controlling FA biosynthesis in model hosts, and in the successful demonstration of metabolic engineering strategies to produce, for example, alkanes, methyl ketones and FAMEs (fatty acid methyl esters).
At present, we are focusing on generating a partially orthogonal pathway capable of producing MCFA using selected heterologous enzymes that work in parallel with the fatty acid synthase pathway from the bacterium's central metabolism. Initial results have been very promising, showing that these enzymes have an extraordinary ability to produce significant amounts of fatty acids with variations in chain length of 8, 10, 12 and 14 carbon atoms.
Specifically, we have achieved a cumulative production of hydroxylated fatty acids (HFA) of 477.79 mg/L from a total fatty acid pool of 821.63 mg/L, representing 58.15% of the FA content.
These results represent a significant advancement in our research efforts and provide valuable insight into the potential for acquiring specific fatty acids through the implementation of this novel strategy.

Keywords: THIOESTERASE; LIPIDS; OLEOCHEMICALS; MEDIUM CHAIN FATTY ACIDS
Methods: Lipid extraction and visualization by TLC (thin-layer chromatography); Preparation of lipidic samples for GCMS (Gas chromatography coupled to mass spectrometry); Protein expression and visualization by SDS-Page; Cloning techniques using restriction enzymes;

LI-06

EFFECTS OF RETINOIC ACID ON TESTICULAR LIPIDS WITH POLYUNSATURATED FATTY ACID DURING *EX VIVO* TISSUE MAINTENANCE

Sanchez Chaves, Manuela; Luquez, Jessica Mariela; Tajes Ardanaz, Oliverio Julián; Oresti, Gerardo Martín.
INIBIBB, CONICET-UNS y Dpto. Biología, Bioquímica y Farmacia, UNS, Bahía Blanca, Argentina.
gmoresti@criba.edu.ar

In vitro spermatogenesis has been successfully achieved by utilizing a gas-liquid interphase culture system. Within this experimental framework, monitoring of lipid metabolism provides a deeper understanding of its significance within the spermatogenic process, thereby yielding valuable insights that could be applied to *ex vivo* spermatogenesis biotechnology. It is known that retinoic acid (RA) is required for spermatogonia differentiation, to complete the meiotic divisions in spermatocytes and to support the full development of spermatogenic cells into elongated spermatids. The molecular mechanism by which RA enhances the spermatogenesis process remains in part unknown. Here, we

evaluated the effects of RA supplementation on testicular lipids with long-chain (C18-C22) polyunsaturated fatty acids (PUFA) during *ex vivo* spermatogenesis progression in prepuberal mouse testicular explants. An analysis of spermatogenic cell types in testis explants from 6-day-old mice cultured for 22 days revealed progress in the differentiation of spermatogonial stem cells to haploid round spermatids. After 44 days in culture, some sperm were detected. Notably, the incidence of spermatozoa per unit of tissue was higher in the presence of RA than in its absence. In addition, the explants exposed to RA had lower amounts of neutral lipids, especially triacylglycerols, than those cultured in basal medium. Moreover, the addition of RA led to a decrease in the proportion of uncommon PUFAs (20:3n-9 and 22:4n-9), which we had previously observed as accumulating in neutral lipids from explants cultured under basal conditions. Simultaneously, similar to what occurs *in vivo*, membrane glycerophospholipids and cholesterol esters increased their proportion of C20-C22 n-6 PUFA. These lipids changes were linked to an augmentation in testosterone production and an increase in the haploid cell in the explants supplemented with RA. The similarity between these lipid changes and those observed in vivo during normal testicular posnatal development underscores the pivotal role of RA in optimizing *ex vivo* spermatogenesis. Supported by SGCyT UNS-PGI-UNS [24/B272 to GMO], CONICET [PIP11220210100420CO to GMO] FONCyT, [PICT2020- 02056 to GMO] and SGCyT UNS-PGI 24/B341 to GMO and JML.

Keywords: PUFA, phospholipids, neutral lipids, retinoic acid, spermatogenesis
Methods: Gas chromatography, TLC, histology, Eclia, Tissue culture

LI-07

EFFECT OF POLYUNSATURATED FATTY ACIDS ON THE EXPRESSION OF TRP53 IN THE DEVELOPMENT OF TONGUE TUMORIGENESIS IN MICE

Don, Julieta [1,3]; Ferrero, Victoria [1,2]; Mazo, Tamara [1,2]; Bernárdez, Sol [3]; Diaz, Verónica [1,2]; Baroto, Nelso [2]; Brunotto, Mabel [1,3]; Pasqualini, María Eugenia [1,2].
[1] Instituto de Investigaciones en Ciencias de la Salud (INICSA-CONICET) - Facultad de Ciencias Médicas, Universidad Nacional de Córdoba. [2] Cátedra de Biología Celular, Histología y Embriología, Facultad de Ciencias Médicas, Universidad Nacional de Córdoba. [3] Departamento de Biología Bucal, Facultad de Odontología, Universidad Nacional de Córdoba.
julieta.don@unc.edu.ar

Oral cancers have a low survival rate and an important impact on the life quality of patients and are associated with sociocultural health determinants such as diet. The objective was to evaluate the modulating effect of polyunsaturated fatty acids (PUFAs) (ω-3 and ω-6) on the *TRP53* expression of a tongue squamous cell carcinoma development, induced by a carcinogenic agent using murine experimental model. The generation of this knowledge may constitute a tool that can improve