

# 17th AOCs Latin American Congress and Exhibition on Fats, Oils, and Lipids

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Grand Fiesta Americana Coral Beach Hotel, Cancun, Mexico



# XVII Congreso Latinoamericano y Exposición sobre Grasas, Aceites y Lípidos de AOCs

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## Resúmenes | Abstracts

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### Sesson Plenaria | Plenary Session

Lunes, 11 de septiembre | Monday, September 11, 2017

#### **Trends in the Cost of Supplying Plant Proteins from G3 Producers to Major End-users.** Owen Wagner, Senior Economist, LMC International, USA

Brazil, Argentina and the US constitute over 85% of global exports of soybean products, by volume. To meet growing global demand for oil and proteins, these three countries have all increased production in their own way over the past twenty years. In Brazil, production has increased by pushing the agricultural frontier north and west. In the United States, soybean production has increased by capturing acreage from small grains in the north and specialty crop products in the south. Finally, In Argentina, soybean production has not pushed into new boundaries-instead increasing on the back of intensification efforts in traditional growing areas. Each of these approaches has had important implications for both the quality and landed cost of soybean product exports globally.

Trends in protein content of soybean meal from the so-called "G3" countries as well as costs of delivering this product to key markets globally will be addressed. This presentation will discuss how meal protein is valued in a global context and examine payback on investing in high protein varieties versus investments in infrastructure to deliver products more efficiently.

#### **Chemical Substance Management in Central and South America: Insights into Sustainability, Regulatory and Management Opportunities.**

Michael S. Wenk, Senior Regulatory Consultant, The Acta Group and Bergeson & Campbell, P.C., USA

Mr. Wenk will present an overview of the chemical substance, pesticide, product stewardship, and worker and workplace safety regulations developing and being implemented at an unprecedented rate in the region. He will focus on several countries that have key legislation either in process or recently enacted, such as Argentina, Brazil, Chile, Colombia, and Costa Rica among others, and will offer observations on how companies can manage their compliance obligations.

agitation and the cooling temperature (TC) over oil binding capacity and some textural and rheological properties by an incomplete factorial design of three factors with three levels. A fitting model for each response and a multi-objective optimization were made to produce oleogels with textural and rheological properties close to those of a commercial margarine (CM). Muffins were prepared using these optimized oleogels and their textural and physico-chemical properties were measured and compared against those obtained in muffins prepared using CM or only HOSO. Moreover, the amount of oil released from muffins over time was measured to evaluate their stability.

The MV and TC were the most significant factors over each analyzed response. It was found that almost all analyzed properties of oleogel muffins resembled the ones formulated with CM. These results indicate that obtained oleogels offer a potential way for the formulation of healthier bakery products.

**A Microstructure-level Study of Monoglycerides Oleogels Using Rheomicroscopy.** Camila A. Palla<sup>1</sup>, María E. Carrín<sup>1</sup>, Juan de Vicente<sup>2</sup>, and María J. Galvéz Ruiz<sup>2</sup>, <sup>1</sup>PLAPIQUI - CONICET - UNS, Argentina; <sup>2</sup>Universidad de Granada, Spain

Monoglycerides oleogels are semisolid systems containing self-assembled structures formed by crystalline material entrapping liquid oil in a three-dimensional network. The microstructure of the network of these oleogels determines their macroscopic functionality. Interestingly, these oleogels can be tailored by modifying the preparation conditions and, in particular, the cooling rate.

In this work, the effect of the cooling temperature profile (CTP) employed in the production of oleogels from monoglycerides and high oleic sunflower oil was investigated using a torsional rheometer equipped with a polarized optical microscope. This technique allows simultaneously carrying out rheological measurements and recording images of the internal structures of the gels during the gelation process. With this, it becomes also possible to obtain microstructural parameters such as the Avrami index that allows us to determine the

dimensionality of the crystal growth process. Once the gelation process finished, the microstructure of the oleogels was also analyzed by confocal and optical microscopy. Micrographs were processed and analyzed using ImageJ software in order to estimate the fractions of solid crystalline and oil, and to determine the network characteristics such as the crystal length and shape, and the box-counting fractal dimension.

Micrographs obtained using these three complementary microscopic techniques revealed a strong consistency. Generally speaking, monoglycerides crystal aggregates distribute in irregular, elongated, fibrillar or needle-like shape. The analysis of the distribution of crystal sizes resulted in very similar median values, D50, which rose with the increase of the CTP. The highest CTP allowed to obtain oleogels with the highest elastic modulus, a fractal dimension close to 2 and a solid crystalline fraction of about 0.15.

**Grasas comestibles cero-trans a partir de aceite de salvado de arroz: análisis de textura.** Nicolás Callejas and Iván Jachmanián, Facultad de Química- UDELAR, Uruguay

En este trabajo se estudió la textura de mezclas de aceite de salvado de arroz (RBO) con aceite de salvado de arroz completamente hidrogenado (FHRBO) y el efecto de la interesterificación enzimática (Lipozyme TL-IM) sobre esta propiedad. Se determinó también la composición en triacilglicerol (HPLC/ELSD), las propiedades térmicas (DSC), características de cristalización (difracción de Rayos-X y microscopía), tanto en las mezclas como en los productos.

Los análisis de textura se realizaron mediante ensayos de penetración (Texturómetro TA.XT2i, provisto de sonda cilíndrica de 3 mm de diámetro) mediante los cuales se determinó la fuerza máxima de penetración o dureza (D). Los valores de D determinados a 25 °C para las mezclas conteniendo de 90 a 20 % de FHRBO variaron de 67.6 a 0.7 N, respectivamente. Las curvas de penetración de las mezclas conteniendo de 90 a 50 % de FHRBO mostraron numerosas irregularidades, lo que indica que son mezclas "quebradizas", mientras que aquellas conteniendo de 40 al 20 % de FHRBO las curvas resultaron más regulares y continuas.