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Structured lipids vs natural TAG enriched in Omega-3 outcome of lipids with different PUFA: ALA, Stearidonic, EPA and DHA

Omega-3 fatty acids have different nutritional effects and health benefits depending on their length, being very different for α-linolenic acid (ALA) and stearidonic acid (18:4) than for EPA and DHA but at the same time, present different properties if the fatty acid is in form of natural triacylglycerol or in form of ethyl ester or structured lipid. Polyunsaturated Fatty Acids (PUFA) Omega-3 are well known for reducing the risk of cardiovascular diseases and prevention of nervous system and inflammatory diseases. Health authorities along the world have promoted the intake of foods that contain higher amounts of Omega-3 fatty long chain acids. For instance, ALA has been recognized by European authorities (EFSA) to reduce blood cholesterol concentration, while EPA and DHA play a vital role in health and correct nutrition, especially during fetal and infant growth. Subsequently, in recent years, there has been a growing interest in alternative sources of Omega-3 oils rich in ALA, like new oilseeds (chia (*Salvia hispanica L.*), camelina (*Camelina sativa L.*), etc.) and also in microalgae lipids with EPA and DHA, like Nannochloropsis, Isochrysis and others. Modern extraction and fractionation techniques such as Pressurized Liquids Extraction (PLE) with green solvents were used to produce healthy lipids concentrated in omega-3 in natural triglyceride form and characterized. Furthermore, natural lipids were enzymatically modified to Fatty Acid Ethyl Esters (FAEE) and to structured Triacylglycerols (sTAG) combining EPA and ALA, with improved content of Omega-3 to compare their health and nutritional properties and comprise desired lipid characteristics to improve the nutritional profile of final food products.

Biography

Francisco J Señorans has developed his research and teaching career in Food Science and Nutrition in different Spanish and international Institutions during the last 25 years at Madrid University (CSIC and UAM) and at Uppsala University (Sweden) as Researcher and Lecturer for two years. He is Chemical Sciences PhD and since 2002, he is Profesor Titular (Associate Professor) at Autonomous University of Madrid (Spain), where he has been responsible of numerous research projects and contracts with industry. He was in charge of the management as a Co-director and creation of the Joint Institute in Food Science Research (CIAL). He is co-author of more than 110 publications of international impact (SCI) with h index of 33 (Web of Science) and of several international patents transferred to industry. In 2001 he received the Prize "Archer Daniels" granted by the AOCS. At present he directs a research team with a sound record of research contract with food and pharma industry, in projects related with healthy lipids, including omega-3 fractionation and enrichment of fish and marine oils, microalgae components extraction with compressed fluids and supercritical technology and enzymatic technologies for structured lipids, hipocaloric oils and polar lipids.

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