

Extraction yield and fatty acid profile of small marine fish oil

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The extraction of oil from raw material of different origins by applying green technologies is a topical concern. Solvent extraction, **hydraulic pressing** or heat based procedures should be replaced by clean technologies, such as enzymatic hydrolysis, microwave or ultrasonic assisted extractions, or supercritical fluid extraction using CO₂.

The aim of laboratory study was to test and evaluate three alternatives procedures for extracting oil from small marine fish raw material, versus a classical Soxhlet extraction, as a control method. The homogenized sample was extracted in three replicates and the applied procedures were: repeated washing with water of raw material and oil separation by centrifugation (**RMW-C**), oil separation by centrifugation (**RMC**), centrifugation followed by repeated water washing of the separated oil, until neutral pH is reached (**RMS-W**). In order to evaluate the oil quality, the chromatographic profile of fatty acids was analyzed. Considering Soxhlet extraction as reference, by which it yields 62,9% oil, all tested procedures have a lower extraction efficiency, the most valuable being RMC with an yield of 72% oil from reference value.

For all tested procedures, the chromatographic analysis showed similar composition in fatty acids profiles, the values for polyunsaturated fatty acids being approximately 7% higher for solvent-free extractions, compared to Soxhlet method. The sum of eicosapentaenoic (**EPA**) and docosapentaenoic (**DHA**) acids has overall average values of 30% that fall within the official quality indicators of fish oils, used in Nutraceuticals application.

Preliminary results show that solvent-free extraction should be considered as a valuable option for fish oil extraction.

Biography

Florea Mihai-Alexandru has completed his Master degree at the age of 24 years at Bucharest University. In the present he is chemist researcher at Biotehnos R&D department and PhD student at University of Medicine and Pharmacy „Carol Davila”, Bucharest, Romania. He was a member in research teams at two national project and published 2 papers in reputed journals

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