RETASTE Conference Abstracts
RETASTE-NOV-1335-In-person Poster
Rethymno, September 16-18, 2026
© Author(s) 2026 CC BY 4.0 License
DOI:10.5281/zenodo.23678179

Fatty Acid Profile of Ethanolic Extracts of Octopus Maya By-products: Effect of UAE and Processing

Aguilar-González, Daniela[1], Cauich-Rodríguez, Juan[2], Rodríguez-Buenfil, Ingrid[1] and Ramirez-Sucre, Manuel[1,*]

[1]*Center for Research and Assistance in Technology and Design of the State of Jalisco, Mexico*
[2]*Centro de Investigación Científica de Yucatán, Mexico*

ACCEPTED

Abstract

In the Yucatán Peninsula, Mexico, octopus fisheries are primarily based on Octopus maya, an endemic species representing about 75% of total production whose by-products could be valorized through fatty acid extraction. In this study, the fatty acid profile of ethanolic extracts from Octopus maya by-products was influenced by both processing conditions (BP: raw, cooked, or freeze-dried) and the ultrasound-assisted extraction method (UM: ultrasonic probe or ultrasonic bath). Variations in fatty acid composition were observed as a function of these factors; however, the magnitude and direction of the effects were fatty acid–specific, reflecting the complexity of matrix–process interactions. For palmitic acid (C16:0), a significant main effect of BP processing was detected ($p = 0.034$), whereas UM showed no significant influence. The highest relative proportions were observed in cooked BP, followed by freeze-dried samples. This behavior suggests that thermal treatment promotes the release of saturated fatty acids previously associated with complex structures such as membrane phospholipids. Stearic acid (C18:0) showed a significant interaction between BP processing and UM ($p < 0.05$). Raw BP exhibited the highest values when extracted using a high-intensity ultrasonic probe, indicating that in high-moisture matrices, intense ultrasound enhances structural disruption and facilitates fatty acid release. Oleic acid (C18:1 n-9) was significantly affected by BP processing, UM, and their interaction ($p < 0.05$). Cooked BP presented the highest relative proportions, particularly when combined with gentle ultrasound using an ultrasonic bath, likely due to the thermal stability of this monounsaturated fatty acid and cooking-induced structural changes. For linoleic acid (C18:2 n-6), only the BP × UM interaction was significant ($p < 0.05$), with freeze-dried BP tending to show slightly higher values, possibly related to reduced oxidative degradation in low-moisture matrices. α-Linolenic acid (C18:3 n-3) exhibited significant effects of BP processing, UM, and their interaction ($p < 0.05$), although concentrations remained low across all treatments. Total omega-3 fatty acids were significantly affected only by BP processing ($p < 0.05$), with higher values observed in freeze-dried and cooked BP, while total omega-6 fatty acids remained stable across conditions. Total omega-9 fatty acids showed significant effects of BP, UM, and their interaction ($p < 0.001$), with the highest values obtained from cooked BP extracted under gentle ultrasound, consistent with oleic acid trends. Overall, BP processing emerged as the dominant factor modulating the fatty acid profile, while UM exerted a selective, matrix-dependent influence, highlighting non-additive effects driven by prior physicochemical and structural changes.

Keywords: Octopus maya, gas chromatography, PUFA

ACCEPTED