

**XV REUNIÓN CIENTÍFICA  
SOCIEDAD ESPAÑOLA DE CROMATOGRAFÍA  
Y TÉCNICAS AFINES · SECyTA 2015**

*XV SCIENTIFIC MEETING  
OF THE SPANISH SOCIETY OF CHROMATOGRAPHY  
AND RELATED TECHNIQUES · SECyTA2015*

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OPTIMIZATION OF MICROWAVE ASSISTED EXTRACTION OF *Mentha* sp. BIOACTIVES

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Despite the existence of a wide variety of food preservation techniques, the microbial contamination continues to be an important problem that affects not only food quality but also food security [1]. Diverse formulations based on plant extracts/essential oils have been developed as a healthier alternative to synthetic antimicrobials [1, 2]. Among them, those arising from different *Mentha* species have been reported as highly effective [3].

Microwave assisted extraction (MAE) is a fast and efficient emergent technique which has gained a great acceptance for the extraction of plant bioactives [4]. To the best of our knowledge, MAE has not yet been applied for obtaining antimicrobials from *Mentha* sp.

After selection of optimal extraction solvent, the effect of different factors (sample weight: 0.75-1.5 g, extraction temperature: 50-100 °C, and extraction time: 5-30 min) on recovery of compounds with antimicrobial activity was evaluated by a Box-Behnken experimental design. Prior to quantitation, extracts were comprehensively characterized by using different techniques: (i) Extracts were directly analyzed or derivatized (trimethylsilyl oximes) for their Gas Chromatography-Mass Spectrometry (GC-MS) analysis using a methyl polysiloxane column (30m x 0.25mm x 0.25µm). (ii) After filtration, extracts were analyzed by Liquid Chromatography-Quadrupole Time of Flight Mass Spectrometry (LC-QToF MS), using a reversed phase C<sub>18</sub> column (100 x 2 mm, 3 µm, 100 Å) and a binary gradient of methanol and water, both phases acidulated with 0.1% acetic acid. The optimized MAE method was applied for extraction of bioactives from different *Mentha* species (*M. spicata*, *M. rotundifolia*, *M. piperita*, *M. pulegium*, etc).

MAE is shown as an advantageous technique for obtaining extracts of *Mentha* sp. with antimicrobial activity of application in the food industry.

[1] C.A. Phillips, K. Laird, S.C. Allen, *Food Res. Int.* **47** (2012) 310-314.

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[3] R.I. Moldova et al., *Dig. J. Nanomater. Bios.* **9** (2014) 559-566.

[4] J. Azmir et al., *J. Food Eng.* **117** (2013) 426-436