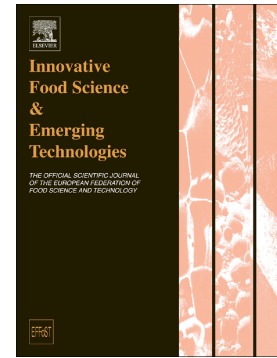


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Ohmic-assisted hydrodistillation of citronella oil from Taiwanese citronella grass: impact on the essential oil and extraction medium

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Abstract

Citronella oil was extracted from *Cymbopogon nardus* by ohmic-assisted hydrodistillation (OAHD) and hydrodistillation (HD) and its specifications were studied by DPPH and chromatography-mass spectrometry. The changes in extraction media were also studied by inductively coupled plasma-mass spectrometry. HD and OAHD yielded the same amount of essential oil (1.5% w/w), with similar physical properties. Conversely, OAHD yielded a higher value essential oil, considering the stronger antioxidant activity (IC₅₀ of 326 vs. 428 µg/mL) and the enhanced concentration of valuable compounds such as citronellal (77.5±0.2 vs. 74.8±0.2) and D-limonene (3.3±0.2 vs. 1.8±0.0). OAHD also saved 46% and 79% of the process time and energy, respectively. However, electrode corrosion was observed in OAHD and metal ions were transferred from titanium electrodes into the extraction medium (Ti concentration: 0.05 mg/L). Precautions to minimize electrode corrosion should be considered for industrial adaptation of OAHD.

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