Hydrophobic Deep Eutectic Solvents for Sustainable Apricot Kernel Oil Extraction

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Hydrophobic deep eutectic solvents (HDES) are an emerging class of green solvents designed for the efficient extraction of nonpolar compounds. Formed by combining natural, biodegradable components like thymol and menthol, HDES offer an eco-friendly alternative to traditional organic solvents. Their low toxicity, ease of preparation, and ability to dissolve hydrophobic compounds make them especially attractive for extracting plant-based oils [**1-5**].

In this study, the extraction of oil from apricot kernels was investigated using hydrophobic deep eutectic solvents (HDES) and compared with conventional methods, including Soxhlet extraction and maceration. A series of HDES were synthesized by combining menthol and thymol in specific molar ratios with hydrogen bond donors such as capric acid and oleic acid.

Extractions were performed using seed-to-HDES ratios of 1:10, 1:20, and 1:30 (w/v) at room temperature, 40 °C, 50 °C, and 60 °C, with different extraction times from 15 to 90 minutes. Preliminary observations indicate that the use of HDES significantly enhances oil yield compared to conventional techniques. In addition, HDES-based extraction offers notable advantages, including reduced energy input, shorter processing times, and lower solvent consumption, which support its potential as a sustainable alternative for plant oil recovery.

References

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