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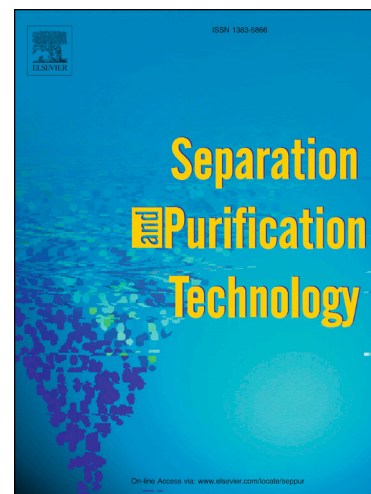
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Valorization of Olive Tree Leaves: Extraction of Oleanolic Acid using Aqueous Solutions of Surface-Active Ionic Liquids

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Abstract

The global olive oil industry annually generates approximately 750,000-1,500,000 tons of *Olea europaea* leaves as waste that are typically burned for energy production. Yet, this agricultural by-product is a rich source of oleanolic acid, a high value triterpenic acid with outstanding pharmaceutical and nutraceutical activities. The present study focuses on the extraction of oleanolic acid from dried *O. europaea* leaves using aqueous solutions of surface-active ionic liquids as alternative solvents. A number of imidazolium-based ionic liquids with variable chain length, different anions and optional side-chain functionalization was synthesized and employed in the extraction of oleanolic acid. Ionic liquids with long alkyl chains in water remarkably enhance the solubility of oleanolic acid in water, thus being able to compete with the solubilities afforded by molecular organic solvents, such as chloroform. Consequently, they are suitable alternatives for the solid-liquid extraction of triterpenic acids from natural matrices and provide improved extraction yields of up to 2.5 wt.% oleanolic acid extracted from olive tree leaves.

Keywords: ionic liquids, aqueous solution, biorefinery, oleanolic acid, solid-liquid extraction, surface activity

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