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A Comprehensive Study on Extraction of Limonene from Orange Peels

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Abstract: *Orange peel wastes, with an estimated global annual production of 25 million tonnes, are problematic to dispose of but can be used to obtain a range of valuable products, among them the main constituent of orange essential oil, D-limonene (DL). This review aims to layout recent advances in the field of DL extraction and purification. Besides substitution of the conventional solvent hexane with certain bio-based solvents, a range of techniques are presented. These include enhanced solvent extraction processes through temperature and pressure intensification or ultrasound, improved distillation most commonly using different microwave-based techniques but also enzymes, and supercritical CO2 extraction. Even though purification has been found to be the most energy- intensive and environmentally impacting step, most studies did not improve on existing centrifugation, decantation, or fractional distillation methods. Chromatography has been proven effective at obtaining high DL purities; however, it still has to be improved because of its high costs and low productivity.*

D-Limonene is a compound that can be acquired from the rinds of the citrus family like oranges, limes, and mandarins. it is quite possibly the most well-known terpene present in nature. It has a few applications and a wide scope of advantages. Numerous medical service suppliers have supported the possible advantages of D-limonene guaranteeing that it can forestall or treat some ailments, for example, Bronchitis, Cancer, Diabetes, Gall stones, etc. It is likewise utilized in enterprises to make hand sanitizers, fragrances, plant pesticides, and synthetic solvents..

Keywords: D-Limonene, Orange Peels, Orange Essentiol Oil, Simple Fractional Distillation, Solvent Hexane, Extraction.

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