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TOPIC(s) : Alternative solvents

Extraction and Enzymatic modification of Indian Sandalwood Oil using Supercritical/Subcritical Carbon Dioxide

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PURPOSE OF THE ABSTRACT

Santalum album or Indian sandalwood has high demands in national and international market due to its uniquely pleasant aroma and various medicinal properties. The essential oil from sandalwood is an important industrial product finding application in flavor and fragrance sector. The medicinal property of the plant can be attributed to santalol which is the major bioactive component. The constituent and properties of the plant varies with its environment. In this study, we have carried out the physio chemical characterization of sandalwood through SEM, XRD, FTIR and TGA. NFTA (National forage testing association) methods have been used for determining the cellulose, hemicellulose and lignin content. The extraction of essential oil is done using alternative solvents like supercritical and subcritical carbon dioxide. For comparative analysis, the extraction has also been carried out by conventional hydro distillation method. The characterization of the essential oil produced has been carried out using gas chromatography-mass spectrometry analysis. Based on this analysis, the amount of santalol extracted by different methods has been compared. In another part of the study, the raw material before extraction is treated with different proportion of enzymes like cellulase and hemicellulase. The proportions of enzymes to be used was decided by the results of NFTA method. The comparative graphs for various and optimum enzyme concentration has been obtained. The enzymatic treatment is followed by extraction of oil by each of the three methods mentioned above. This enzymatic treatment has been observed to increase the yield of oil obtained by each of the extraction method employed. The study is aimed to develop a greener extraction method for sandalwood oil. At the same time, we have also attempted to increase the yield of oil extracted.

FIGURES

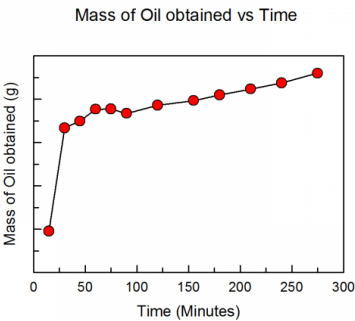
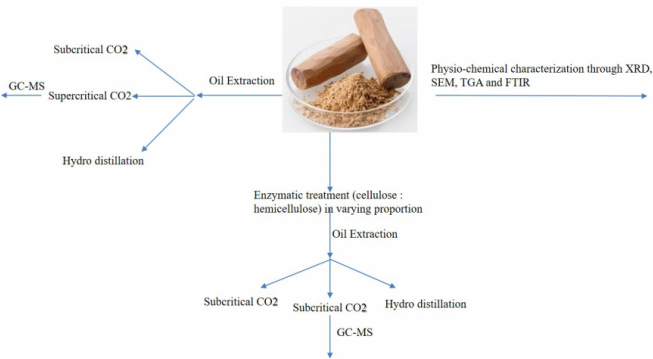


FIGURE 1
Graphical abstract
Pictorial representation of abstract

FIGURE 2
Mass of oil obtained vs time (supercritical CO2 extraction)
indicated properly in graph

KEYWORDS

Santalum album | santalol | supercritical Carbon dioxide | subcritical carbon dioxide

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