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Hydrodistillation and Soxhlet extraction of Agarwood leaf extract from *Aquilaria malaccensis*

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Abstract

Agarwood (*A. malaccensis*) is a valuable tree; highly sought after the resin and its essential oil. It also possesses bioactive compounds that are beneficial for health. However, less is focused on the agarwood leaf despite the recorded use in traditional medicine. As such, this present work focused on the screening of operational parameters of hydrodistillation and Soxhlet extraction of agarwood leaf extract (ALEX) with subsequent phytochemical and gas chromatography mass spectrometry (GCMS) analyses. Hydrodistillation failed to obtain any essential oil. Therefore, only Soxhlet extraction was further studied based on Plackett-Burman design generated using Design Expert software, version 6. The parameters studied were solvent type and volume, time, leaf type and particle size. Based on the ALEX yield obtained, solvent type was found to be the most significant parameters followed by solvent volume, particle size and time. Meanwhile leaf type was found to be the least influential parameter. Ethanol gave higher yield as compared to hexane. Run 2 gave the highest ALEX yield (121.34 +/- 31.6 mg/g) and Run 4 gave the lowest yield (20.38 +/- 4.1 mg/g). Based on phytochemical analysis, ALEX possess phenol, flavonoid, alkaloid, saponin and steroid compounds. GCMS analysis has identified a total of 50 compounds from ALEX in 12 experiments. Hexadecanoic acid was found to be the major compound in run 2 (highest yield) and phytol was found to be the major compound in run 4 (lowest yield). To this end, ALEX was successfully obtained through Soxhlet extraction and the significant parameters can be further studied to achieve optimal yield.

Keywords

Author Keywords: Agarwood; hydrodistillation; operational parameters; phytochemicals; Soxhlet

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