

Screening and Profiling of Mixed Essential Oils: An Analytical Approach Using GC-MS for Quality Assessment

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ABSTRACT

This study presents the extraction and characterization of mixed essential oils derived from the flowers of selected angiospermic plants: *Prosopis cineraria* (Shami plant), *Jasminum sambac* (Motia flower), *Nyctanthes arbor-tristis* (Parijat), and *Cestrum nocturnum* (Rat ki Rani). These oils were extracted using the hydrodistillation method with a Clevenger apparatus, a technique recognized for its efficiency in isolating thermally stable volatile compounds. The chemo-profiling process involved the identification and quantification of bioactive constituents through gas chromatography-mass spectrometry (GC-MS).

This research paper focuses on mixed essential oils obtained from angiospermic plants. Mixed EOs are typically obtained by blending two or more EOs from different plant species or by extracting EOs from a mixture of plant materials. Mixed EOs may offer synergistic effects, combining the therapeutic properties of individual EOs or enhancing their efficacy [19]. The study also highlighted the potential synergistic interactions between the compounds in the mixed EOs, suggesting enhanced bioactivity compared to individual oils. This synergism may amplify the pharmacological effects, making the mixed oil more effective in therapeutic applications.

This comprehensive chemo-profiling not only provides insights into the phytochemical diversity of these Essential oil but also underscores their versatility and potential for diverse pharmacological, aromatic, and industrial applications.

Keywords: *hydrodistillation, chemo-profiling, gas chromatography-mass spectrometry, synergistic, phytochemical*