

Oil Extraction and Perfume Formulation from Plants: A Review

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ABSTRACT

Perfume industries are growing in demand as the living standards are improving day by day. There is increasing demand for perfumes. They mask the body odor. Various methods such as solvent extraction, hydro distillation and enfleurage can be used for oil extraction. Distillation based recovery processes such as steam and vacuum distillation are preferred for the extraction of essential oils from plant materials. Other methods include solvent extraction, expression or enfleurage. The current review summarizes research on various methods for oil extraction and perfume formation from various raw materials.

Key words: Distillation, extraction, yield, essential oil, solvent.

INTRODUCTION

Fragrance oil(s) are also known as aroma oils, aromatic oils, and flavor oils. They are synthetic aroma compounds or natural essential oils that are diluted with a carrier like propylene glycol, vegetable oil, or mineral oil. Perfume is a mixture of fragrant essential oils or aroma compounds, fixatives and solvents. It gives a pleasant scent to the human body, animals, food, objects, and living-spaces. Perfume give pleasant feeling and increases enthusiasm to perform better at workplaces. Many plant extracts are very important from therapeutical perspectives. Extracts of biologically active components isolated from plant species finds numerous applications in perfume, aroma and pharmaceutical industries. A perfume is composed of three notes, namely base note, middle note and top note. Smell of fragrance after drying is referred as base note. Mixing of perfume with unique body chemistry forms middle note. The first smell experienced in an aroma is top note. Plant

and animal substances are traditionally used for perfume formation. Essential oils, pure grain oil and water are three key ingredients in relation to perfume making. Essential oils, or volatile oils, are found in many different plants. Investigations are reported on oil extraction by distillation for modification and optimization. ^[1,2] Various analytical and physical aspects have been investigated by various investigators. ^[3-5] In the current review, the summery on research carried out for perfume and essential oil extraction from various sources is presented.

REVIEW ON OIL EXTRACTION AND PERFUME FORMULATION FROM PLANTS

Extraction of essential oil of lemongrass by microwave-assisted hydro distillation (MAHD) and solvent free microwave extraction (SFME) method was carried out by Singh et.al. ^[6] Their investigation included studies on effects of various parameters like microwave power, irradiation time and sample particle size.

They observed an increase in oil yield with increasing microwave power, irradiation time and decreasing particle size. An investigation on the effects of three maturity stages at harvest of lemongrass on essential oil, chemical composition and citral contents was carried out by Tajidin et.al. [7] They observed that maturity stage at harvest is influenced by essential oil and citral contents. Their studies pointed out that it is important to harvest at the appropriate level of maturity in order to achieve high quality essential oil. Wany et.al reviewed chemical analysis and therapeutic uses of citronella oil from cymbopogon winterianus. [8] According to them there are several possible varieties of Citronella which consistently gave oils of composition different to either Ceylon type or Java type. This review provided an insight into chemical composition and the extent to which the main constituents varies in proportion. Two methods, viz. microwave-assisted hydro-distillation (MAHD) and conventional hydro distillation (HD) for extraction of Lemongrass (Cymbopogon Citratus) essential oil were used by Ranitha et.al. [9] They observed that MAHD method provided a better alternative. Ain et.al investigated use of lemongrass (Cymbopogon citratus) oleoresin in pressurized liquid extraction (PLE). [10] They found optimized operating conditions as 167°C, a pressure of 1203 psi and a static time of 20.43 min. Oloyede carried out an investigation on antibacterial activity of aqueous extract of Cymbopogon citratus leaves. [11] He also studied chemical composition of aqueous extract of Cymbopogon citratus leaves. He observed that Cymbopogon citratus leaves could be considered safe and good as a therapeutic agent. Amenaghawon et.al steam distilled Lemon Grass (Cymbopogon Spp.). They studied modeling and the kinetic aspects. [12] They found that extraction was not instantaneous. They also observed that the yield can be improved by using loose packing of the plant material within the steam distillation equipment. Mane et.al

carried out an investigation on formulation of perfume from lemongrass. [13] They used three methods namely solvent extraction, hydro distillation and enfleurage for oil extraction. Their research indicated that oil was not instantly extracted. Wetting or swelling of the grass inside the distillation still consumes 10-15 minutes. They observed that the yield in solvent extraction method was greater than the yield obtained from steam distillation. Experiments and modeling for extraction of the Cymbopogon winterianus essential oil extraction by steam distillation were carried out by Cassel et.al. [14] Cultivated Cymbopogon winterianus, (Jowitt) and C. citratus (DC) (STAPF) were also used with satisfactory results by Chagonda wt.al. [15] Moncada et.al studied techno-economic and environmental assessment of essential oil extraction from citronella (cymbopogon winteriana) and lemongrass (cymbopogon citrus) [16]

CONCLUSION

Various methods such as solvent extraction, hydro distillation and enfleurage can be used for oil extraction. Various analytical and physical aspects are investigated by various investigators. Essential oils, pure grain oil and water are three key ingredients in relation to perfume making. Essential oils, or volatile oils, are found in many different plants. Distillation based recovery processes such as steam and vacuum distillation are preferred for the extraction of essential oils from plant materials.

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