



Extraction and formulation of perfume from lemongrass leaves

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Abstract: The present work consisted of extraction, formulation of perfume from lemongrass leaves. The lemongrass oil was extracted by using solvent extraction method, Evaluation of extracted lemongrass oil was done on the basis of physicochemical parameters, such as color, odour, volatility, specific gravity, viscosity etc. The specific gravity and viscosity of oil was found to be 0.88 and 0.13 respectively. A fixative (Bezoïn) and carrier solvent (Methanol) were used to create perfume using the extracted essential oil. The experiment was done to extract the highly concentrated essential oil from lemongrass, which is employed in the creation of perfumes. In conclusion, the scent of the perfume was created using lemon grass is sweet and pleasant.

Keywords: essential oil, extraction, aromatherapy, perfume.

INTRODUCTION

Aromatic plants synthesize and preserve a variety of biochemical products, many of which are extractable and useful as chemical feed stocks or as raw materials for various scientific investigations.² Lemongrass is one of them having medicinal properties such as antibacterial, anti-inflammatory, antidepressant, antioxidant etc.⁹

Lemongrass (*Cymbopogon citratus*) is an aromatic grass that grows between 210 and 315 cm tall and is a member of the Gramineae plant family. Lemongrass oil has a watery viscosity, a dark yellow to amber color, and a lemony, pleasant scent. Lemongrass oil is used in variety of conditions such as, reviving the body, headaches, nervous fatigue and stress-related illnesses.⁸

Essential oils are used with fragrance or perfumes because they are oily in nature and they represent the essence or active elements of plants. Oils with antibacterial, antifungal, antiviral, and antiseptic properties are used in the medical field as well as in many medical therapies like aromatherapy.⁴

Terpenes are chemical constituent of essential oil. The common plant sources of terpenes are tea, rosemary, cannabis, and citrus fruits (e.g., lemon, orange, mandarin). Terpenes are anti-inflammatory, antiseptic, antiviral, and bactericidal.¹⁰

Essential oil extracted by use of solvent extraction method. In extraction process, heat, chemical solvents, or exposure to oxygen denatured the aromatic compounds and changing their odour character.³

Aroma and flavor have always been a part of our lives. By different means we all use perfumery and flavor materials, in our daily life. Most perfume comes naturally from many plants. This perfume is known as *aroma* which is a Latin word and those flora which have this aroma are known as aromatic plants. These aromas are extracted from some odoriferous material called essential oils.⁷

The aim of this research is to produce perfumes from natural/plant sources rather than synthetic chemicals, which will reduce any harmful effects that may arise from using synthetic chemicals.

This project focuses on the extraction and formulation of lemongrass into perfumes.

MATERIAL AND METHODS

Materials:

The material used in this study are, lemongrass leaves (130g), which was used as raw material, Distilled water (500ml) used as solvent, N-hexane (600ml) used as volatile liquid, Ethanol (200ml) used as organic solvent for soluble extraction.^{4,6}

Methods:

The method was consisted of two steps. The first one was extraction of oil and the second was perfume formulation from the oil.³

Step 1- Solvent extraction

130g of the dried lemongrass leaves were dipped in 600 ml of n-hexane solvent and was then stopper. The contents were left to stand for 24 hours in order to completely extract the lemongrass's oil. Since, essential oils are soluble in ethanol; 200ml of ethanol was added to the mixture to extract the oil. The liquid/liquid separation technique was used to separate the mixture. After it had been placed to a 500ml separating funnel. After allowing the separating funnel's contents to reach equilibrium, they split into two layers. This was done to get rid of the ethanol and leave the pure essential oil behind. On the measuring the extract on

an electronic weighing balance, the yield of oil was calculated.^{4,8} Evaluation of oil carried out by using physicochemical characterization. On the basis of this evaluation, oil have shown pale yellow color, aromatic camphoraceous odour, oil have pungent taste. It has high volatility. Oil was soluble in water and having miscibility in alcohol. Specific gravity of oil was evaluated by amount of material and amount of water which is calculated about 0.899. Viscosity was determined by Brookfield viscometer (labman digital rotational viscometer, model no-Lmdv60) which is calculated about 0.13.¹⁰

Step 2- Formulation of perfume with essential oil produced

For the formulation of perfume 120 ml beaker containing Bezoins (5ml) used as fixative, Methanol (5ml) used as organic solvent, distilled water (50ml) used as solvent and lemongrass oil (10ml) used for fragrance as well as it give medicinal property such as anti-inflammatory, antidepressant, antioxidant etc. This mixture was shaking before pouring it into a 100 ml bottle.⁴

RESULTS AND DISCUSSION

Table 1: Solvent extraction method (weight of oil with respect to time)

Weight of oil (g)	Time (min)
0.2	240
0.3	480
0.7	720
0.72	960
0.78	1200

Table 2: Physicochemical characteristics of lemongrass oil

Sr. no	Physicochemical characteristics	Results
1	Color	Pale yellow
2	Odour	Aromatic camphoraceous
3	Taste	Pungent
4	Volatility	High volatility
5	Solubility	Insoluble in water
6	Miscibility	Miscible in alcohol and in oil.
7	Specific gravity	0.899
8	Viscosity	0.13

The results from solvent extraction method, weight of oil with respect to time was shown in table 1. To calculate the oil yield at various times, the volume of oil was measured every 4 hours. From the solvent extraction method % yield was found to be 2.0. As the amount of ethanol solvent decreases with time, the

essential oil is left in the mixture. The physicochemical characteristics of extracted oil was evaluated and shown in table 2. Solvent extraction generated the highest yield in the analysis with the least amount of heat and air exposure.

FUTURE SCOPE

This project focuses on using lemongrass to extract and create perfumes rather than synthetic chemicals, which minimizes the negative impacts. Because of the readily available, inexpensive raw ingredients, the success of this operation will encourage the growth of the perfume industry locally. Additional individuals will become involved in lemongrass growing, and the perfume industry will add more jobs.

CONCLUSION

The experiment was done to extract the highly concentrated essential oil from lemongrass, which is employed in the creation of perfumes. Analyses were conducted to determine the oil yields produced by solvent extraction technique and the formation of perfume utilizing the produced essential oil. The experiment's findings showed that solvent extraction produced the highest yields.

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