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Extraction of Essential oil From Plant Leaves

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Abstract: *Essential oil is a concentrated hydrophobic liquid containing volatile aroma compounds from plants. They are also known as volatile oil, ethereal oils, aetherolea or simply as the oil of the plant. Anoil is essential in the sense that it contains the essence of plant's fragrance. Essential oilcan be extracted from plantleaves, barks, flowers, stem, seeds. Essential oil bring a wide range of health benefits, unlike modern drugs they have no side effects. Mostly, essential oil are obtained by distillation although other methods are used other methods include expression, solvent extraction, absolute oil extraction, resin tapping and cold pressing In this project IS1797(trap method) is used to extract oil. Apparatus consist of a 500 ml short neck round bottom flask heated using heating mental and provided with a reflux condenser discharging into a trap connected to a flask. The trap serves to collect and measure the condensate. We got the essential oil from eucalyptus leaves (0.79%), basil leaves (0.99%), karanjaleaves (0.39%). Essential oil of basil leaves is more than that of karanja and eucalyptus leaves.*

Keywords *: essential oil, karanja, basil, eucalyptus, IS1797.*

1. Introduction:

Essential oils composed of highly volatile substances that are isolated by a physical method or process from plants of a single botanical species. The oils normally bear the name of the plant species from which they are extracted. Essential oils are so named as they are believed to represent the very essence of odor and flavor of plant. Essential oil plants include a broad range of plant species which are used for their aromatic value as flavorings in foods and beverages and as fragrances in pharmaceutical and industrial products. Essential oils extracted from plants are in a complex mixture of terpenes, oxygenated derivatives and other aromatic compounds. [2]

Oils are used in the embalming process, in medicine and in purification rituals. There are also over 200 references to aromatics, incense and ointments in the Old and New Testaments. Research has confirmed centuries of practical use of Essential Oils, and we now know that the 'fragrant pharmacy' contains compounds with an extremely broad range of biochemical effects. There are about three hundred essential oils in general use today by professional practitioners. Continual bombardment of viral, bacterial, parasitic and fungal contamination occurs in our body. Essential oils are a great benefit to help protect our bodies and homes from pathogens. Immune system needs support and these essential oils can give the required endorsement. Steam distillation IS1797 is used in the extraction of Essential Oil from the plant material. It is a special type of distillation or a separation process for temperature sensitive materials like oils, resins, hydrocarbons, etc. which are insoluble in water and may decompose at their boiling point. The fundamental nature of steam distillation is that it enables a compound or mixture of compounds to be distilled at a temperature substantially below that of the boiling point of the individual constituent. Essential Oil contains components with boiling points up to 200°C or higher temperatures. In the presence of steam or boiling water, however, these substances are volatilized at a temperature close to 100°C, at atmospheric pressure. [1]

2. Method:

Apparatus: Distillation apparatus- consist of 500ml short neck round bottomed flask heated using a heating mantle and provided with a reflux condenser discharging into a trap connected to flask. The trap serve to collect and measure the condensate.

Figure 1. Schematic diagram for the essential oil extraction using trap method.

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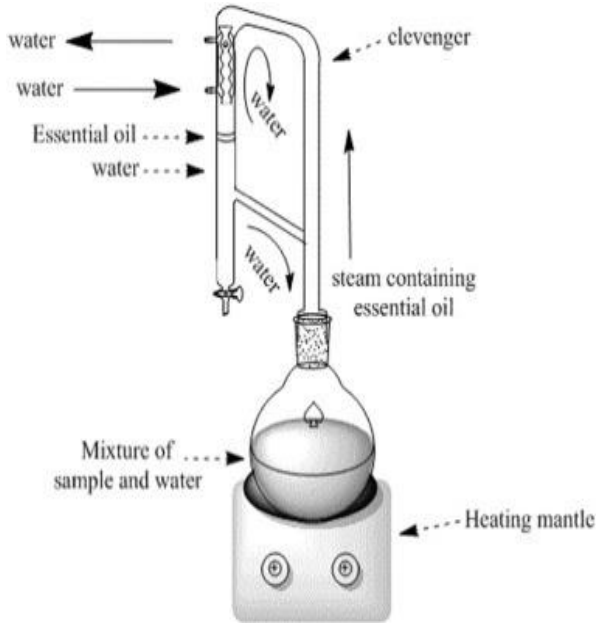

Procedure:25 gm crushed sample (Eucalyptus, Karanja, Basil) leaves taken into round bottom flask and 500ml water into it . Distill it till we get the constant volume of volatile oil in the distillation trap. Once optimum oil is collected in the trap, measure the volume of oil recovered in trap. Calculate percentage of oil on the basis of volume of the sample.

3. Result and Discussion

Observation table:

Sr no	Leaves	Volume of oil collected
1	Eucalyptus	4.15
2	Karanja	2.05
3	Basil	5.2

Calculation :

1) Eucalyptus

% of oil = $\frac{volume\ \ of\ oil\ collected}{total\ \ volume}$*100

$=\frac{4.15\ \ *\ \ 100}{525}$

= 0.79

2)Karanja

% of oil = $\frac{volume\ \ of\ oil\ collected}{volume\ \ of\ sample\ +water}$*100

$= \frac{2.05\ \ *\ \ 100}{525}$

= 0.39

3) Basil

% of oil = $\frac{volume\ \ of\ oil\ collected}{volume\ \ of\ sample\ +water}$*100

$= \frac{5.2\ \ *\ \ 100}{525}$

= 0.99

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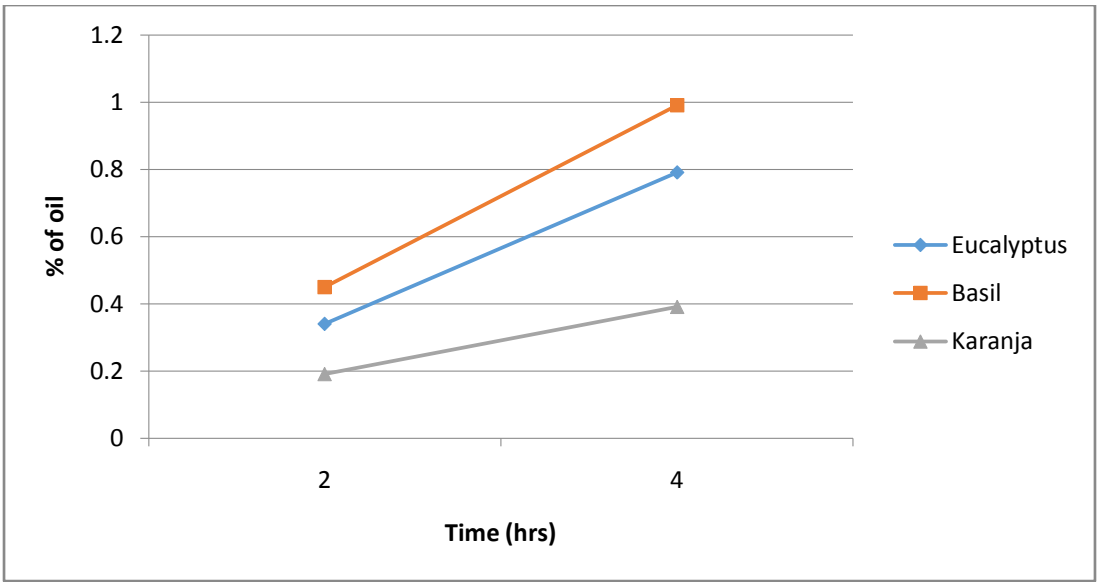

Essential Oil obtained is negligible before the components of the oil reach to their boiling point. After reaching to their boiling points Essential Oil is obtained. From the graph we can see thatBasil oil is more as compared to Eucalyptus and Karanjaoil. Whereas karanja leaves contains lesser amount of essential oil.

4. Conclusion

Finally we can conclude the following deductions from the above experimental and analysis part Steam distillation method was found to be one of the promising techniques for the extraction of Essential Oil from plants as this process will preserve the original qualities of the plant. Steam distillation is a special type of distillation or a separation process for temperature sensitive materials like oils, resins, hydrocarbons, etc. which are insoluble in water and may decompose at their boiling point (which can be prevented using Steam Distillation method). Extraction of Essential Oils using Steam Distillation can be used on industrial scale to make various finished products which includes body oils, cosmetic lotions, baths, hair rinses, soaps, perfumes and room sprays.

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