



## Preparations of Perfume Using Dry Artemisia Absinthium Leaf

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### Abstract

*Perfumes are substances that are used basically to mask an unpleasant odor or to impact the desired fragrance on an object. It is extracted from different parts of plants. When the abstraction process is exposed to heat or oxygen the aromatic compounds are denature. For this project, the essential oils used for the formulation of these perfumes would extract from Artemisia Absinthium (Ariti) by effleurage extraction method using Methanol and ethanol as a solvent. The essential oil yield by this method is 5.38ml from 30 grams of dry Artemisia Absinthium.*

*The physical and chemical characteristics of its essential oils were studied for the formulation of perfume. The oil is soluble in organic solvent and slightly soluble in water and its pH value is 6.05. The extracted oil was characterized by its physical properties and chemical properties using FT-IR which shows different functional groups with 87.88 percent is methyl linoleate compound.*

*Functional group of aldehyde, ketones, hydrocarbon, and alcoholic acid are exist in the FT-IR analysis which indicates the presence of perfume. Generally, the oil found from Artemisia absinthian leaf by combining with fixative and carrier solvents is possibly used to produce perfume.*

**Keywords:** *Artemisia absinthian, Effleurages extraction method, Essential oil*

## 1. INTRODUCTION

In the history of human being peoples have been attempted to increase their own odor by using perfume which rivals nature's pleasant smells and uses of scents, aroma, and fragrance for many centuries [1]. Perfumes are used to mask body odor and are used to make people feel good. It can be produced naturally or synthetically to apply the skin and clothing to put in cleaners and cosmetics or scent the air. Due to the difference in body chemistry, temperature, and body odors, no perfume will smell the same on any two people [2].

Many plants distributed throughout the world contain a group of odiferous, fragrance, and only products that are highly volatiles organic substance collectively known as essential oils [3]. The oil may be combinations of fragrant, volatile compounds with aromatic plant material depend on plants oil type [4, 5]. Essential oil can be used directly as perfume by robbing the oil on the skin, cloth or any other materials. It is usually stored in a bottle different from spraying bottle where it can be applied without been sprayed because of its viscosity. Each plant species originated in certain regions of the world with particular environmental conditions and neighboring fauna and flora [6].

Therefore, perfume can be prepared from the essential oil of plants. It is a complex mixture of aldehyde, ketones, hydrocarbon, alcoholic acid, and other short-chain esters [7]. The reason why a perfume may lose its fragrance faster than normal is because only a little amount of fixative was used when preparing the perfume. They are used to support the primary scent by bolstering it. Many resins, wood scents, and bases are used as fixatives. There are various types of plant species in Ethiopia which used to produce perfume among these *Artemisia Absinthium* is the most commonly known [8]. It is a species of warm wood native to Mediterranean countries typically found growing in dray west place such as rod sides, preferring a nitrogen-rich stony and hence loss soil, the plant growth naturally in the northern and central part of Ethiopia [9]. *Artemisia Absinthium* plant (locally, called "ariti or nechire") is grows around Yeky worda specifically Tepi town. However, studies on perfume at this plant especially in the south nation and nationality region of Ethiopia are less. Due to soil chemistry, geographical difference, soil type, weather condition, etc. differences in place to place I was interested to do this project.

In this project, the core aim is to prepare perfume from *Artemisia Absinthium* by applying the Enfleurage extraction method. Mostly in Ethiopia perfume cannot produce for domestic use rather imported from neighboring countries (Sudan) and Arabs. Producing perfumes in the homeland is an available option to decrease a shortage of perfume products, foreign currency, and import rather it can increase export product standards besides job creations. Therefore this project work is interested in making perfume from *Artemisia Absinthium* leaves.

## **2. MATERIALS AND METHODS**

### **2.1. Chemicals and Equipment's**

All reagents and standards used in the study were analytical grades. Methanol and ethanol are added to the fragrance or essential oils as a primary solvent to reduce the strays of the oils and as the vehicle through which the perfume can come out like smoke. Fixatives are used to lower the degree of evaporation of the fragrance of essential oils. Sunflower oil is also used to abstract the oil by like dissolve like principle. The equipment's used for the experimental work was an Iron stand, 250 ml separation funnel, 250 ml and 200 ml beaker, Electronics weighting balance, Mortar and pastel, 500 ml round bottom flask, Electric heater, and Perfume bottle.

### **2.2. Sample Collection**

*Artemisia Absinthium* leaves (Local name, Ariti) were collected from around Tepi town, in Yeky wereda south nation and nationality regional states, Ethiopia and transported to Mizan Tepi University Tepi campus with polyethylene bottle.

### **2.3. Pre -Treatment of *Artemisia Absinthium***

First, the collected plant part was washed with tap water to remove dust and other contaminations. The moisture was removed by dry air at room temperature in a dust-free environment.

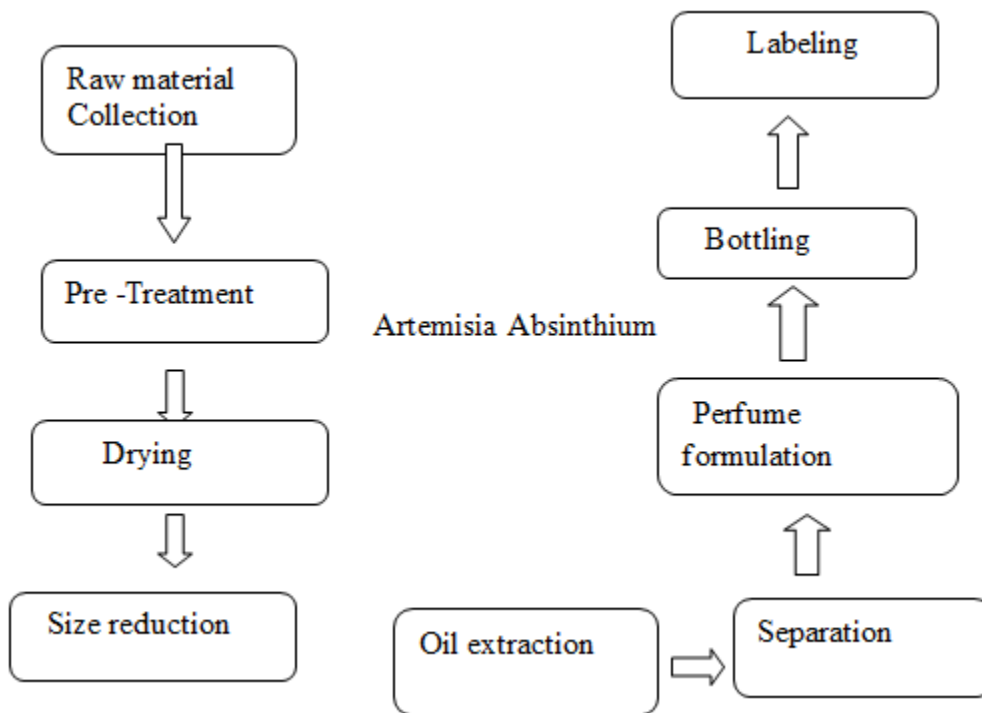


*Fig 1 Fresh leaves*

*Dry leave*

### 2.4. Sample Preparation

The dry *Artemisia Absinthium* would be pulverized into fine powder by using mortar and pestle to increase surface area.



*Fig 2 Flow diagram of perfume extraction and formulation*

### 2.5. Enfleurage method description

The enfleurage method is one of the extraction techniques used to remove the essential oils [10]. A solvent most of the time alcohol is then added which separates the essential oil from the fatty substance. The alcohol will then evaporate leaving only the essential oil. The extraction techniques were employed to capture the true odor of the most delicate flowers. The yield of essential oil using the enfleurage method, from the flowers is better than volatile solvents or distillation [11].

### 2.6. Experimental Procedure of essential oil extraction

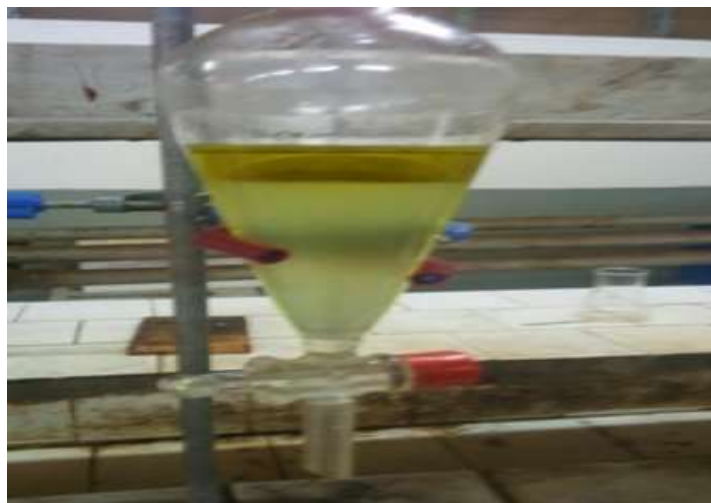
A sample of 30 grams was placed in a 500ml round bottom flask and 200ml of sunflower oil was warmed at 70 degrees Celsius, and then it was poured into a 500ml round bottom flask which contained the sample. Soon after the flask was covered by aluminum foil and was shaken. Then it was allowed for 48 hrs at room temperature.



*Fig 3 Soaking of oil for two days (48 hrs)*

### 2.7. Separation of essential oil

After 48 hours the oil was poured out from the residue and separates it with decantation then 300ml of ethanol was added into the extracted oil. The mixture was separated using a separator funnel and the upper portion which contained ethanol and essential oil was placed on an electric heater at 78°C. The alcohol was vaporized finally, the essential oil was remaining and weighed.



*Fig 4 Separation of oil in separator funnel*

### **2.8. The solubility of Artemisia Absinthium Oil**

The solubility of Artemisia Absinthium oil was seen by adding 10ml of a sample into 20ml of alcohol and water in the different beaker.

### **2.9. Determination of pH Value**

25ml of the oil sample was poured into a clean dry 50ml beaker and a pH meter was used to determine the pH value of the oil at room temperature. The pH electrode was standardized with a buffer solution and the electrode was immersed in the sample and the pH value was read and record [12].

### **2.10. IR analysis**

IR spectroscopy is an instrument used to characterization gas, liquid, and solid samples. Material containing a sample blended with NaCl, KBr must be transparent to the IR radiation [13]. A spoonful of the sample was blended with a purified potassium bromide to abolish scattering effects from large crystals. These fine particles of mixtures are pressed in a mechanical press to form a shining pellet through which the beam of the spectrometer can pass. After preparing the sample by adjusting the IR instrument the sample was analyzed.

### **2.11. Preparation of perfume from prepared essential oil**

6 ml of the extracted essential oil was measured and poured into a 50ml beaker containing a carrier solvent of 3 ml methanol and it was shaken by a shaker. 10ml fixative was added into a beaker which contained the mixture to improve the longevity of the perfume and then the mixture was shaken.

The mixture was poured into a black bottle then it was placed in the dark area to concentrate the perfume for three weeks. Finally, it was filled in a bottle of perfume. Sensory attributes such as color, aroma, and overall acceptability of the perfume were examined.

### 3. RESULTS AND DISCUSSION

#### 3.1. Physical properties of the extracted essential oil

**Density:** the density value of essential oil was 0.83g/ml. This indicates that the oil of the extracted *Artemisia absinthium* leaf is rich in a complex composition.

**Color and Smell:** the essential oil was noted as orange liquid with a strong aromatic fragrance. This result was similar to that reported from Iran. However, this extracted oil was somewhat contrasting the color of *Artemisia absinthium* oil obtained from Mekelle which is dark blue opaque, and from Tajikistan blue and dark blue liquid.

**Solubility:** freshly extracted essential oil is very slightly soluble in water and soluble in common organic solvents. These show that the extracted oil might be slightly polar behavior.

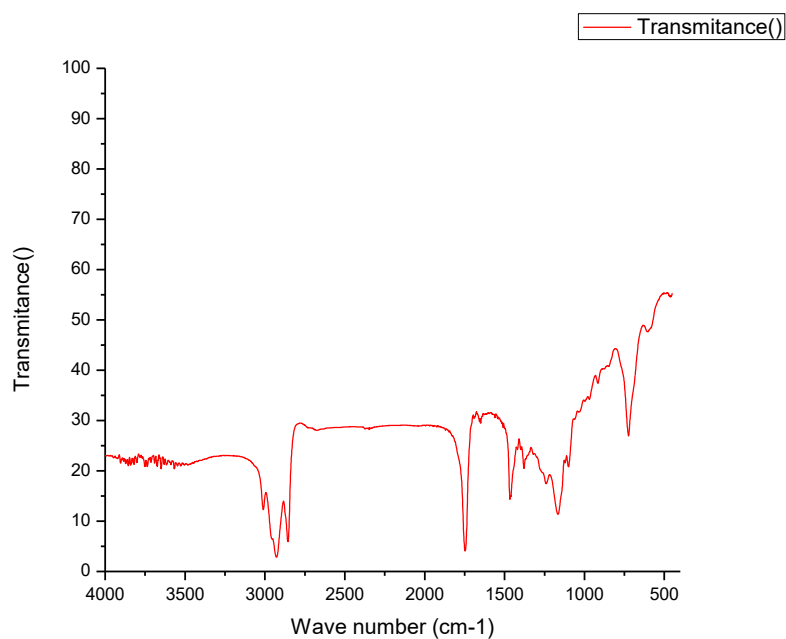
*Table 1: P<sup>H</sup> Value of the extracted Oil*

Trial	P <sup>H</sup> value	Average
1	5.95	6.05
2	6.08	
3	6.12	

P<sup>H</sup> value of the extracted oil was determined by the pH electrode as measuring experimental procedures were stated in section 2.9. The average pH or acidic basic value of the oil was 6.05. Therefore, the pH of *Artemisia absinthium* oil was 6.05 which are slightly neutral. In preparation of skin and hair care materials, the preferable pH value range is 3.5 – 6.5 [14]. So, the obtained pH

value of Artemisia absinthium oil is in the range to be used in producing cosmetic materials and commercially recommended.

### 3.2. FT-IR Spectral Analysis



*Fig 5 FT-IR spectra Analysis of oil*

*Table 2 FT-IR results interpretation*

Wave no. (cm <sup>-1</sup> )	Bond	Experimental results	Functional group
2900-2750	C-H stretching	2876cm <sup>-1</sup>	Aldehydes
1750-1720	C=O stretching	1749.7cm <sup>-1</sup>	Aliphatic aldehyde
1720-1700	C=O stretching	1749.7cm <sup>-1</sup>	Aliphatic ketone
1470-1450	C-H bend	1423cm <sup>-1</sup>	Alkanes
1320-1000	C-O stretch	1126cm <sup>-1</sup>	Alcohols, Carboxylic Acids, Esters, Ethers
700-610	-C(triple bond) C-H:C-	604cm <sup>-1</sup>	Alkynes



From the experimental results of FT-IR, interpretations the sample of Artemisia Absinthium oil around 87.88 percent is methyl linoleate compound. The FT-IR spectral analysis of extracted oil showed that the presence different functional groups among these aldehydes, ketone, alkane and acidic functional groups in the wavenumber range of 3000-500 $\text{cm}^{-1}$ . This shows that extracted oil is rich in perfume. The oil possibly acidic property since the presence of acidic functional group in it and also its  $\text{p}^{\text{H}}$  value was 6.05 in this study. Therefore as we tried to describe the solubility properties of Artemisia Absinthium oil results were by the presence of such compounds.

Even though the color of extract oil obtained results were somehow different in color as compared to other literature and similar with some other literature results. In this project, the prepared perfume has the perfumery power to impart a pleasant and suitable odor. In addition, the product was incorporated with other fragrance or perfume based on an individual's preference to obtain the different Oder since perfume is never the same to different individuals. In this regard, Artemisia Absinthium oil could possibly help full and preferable to develop the different Oder in combination with other aromatic fragrance.

## **CONCLUSION**

The ultimate objectives of this project are the production of perfume from dry Artemisia Absinthium leaves as a primary extraction of oil from the leaves. Moreover, the oil obtained from the dry Artemisia Absinthium leaves a comparatively very good and attractive aromatic smell. Based on the results of this investigation, it can be decided that my result in this study showed that orange liquid oil. The amount of oil extracted from 30g of dry mashed Artemisia Absinthium is 5.7 ml which is in line with other recorded literature results. The fragrance obtained has a good aroma. The physical and chemical properties are in line with other literature. Generally, the Artemisia Absinthium leaves have good perfume character according to this study.

## **ACKNOWLEDGEMENT**

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