INTRODUCTION

Essential oils, volatile oils or aromatic oils, as their name implies are the volatile, odorous principles of plant and animal sources. Volatile oils are generally mixtures of hydrocarbons and oxygenated compounds derived from these hydrocarbons. In some oils, the hydrocarbons predominate and only limited amounts of oxygenated constituents are present, in others the bulk of the oil consists of oxygenated compounds. The odour and taste of volatile oils is mainly determined by these oxygenated constituents, which are to some extent soluble in water but more soluble in alcohol. Many oils are terpenoid in origin, a smaller number such as those of cinnamon and clove contain principally aromatic (benzene) derivatives mixed with the terpenes. A few compounds, although aromatic in structure, are terpenoid in origin.

Cinnamomum zeylanicum Blume (Lauraceae), the evergreen tree of tropical area, is considered to be the native of Sri Lanka and Malabar Coast of India, and up to a limited extent in eastern India. It is a moderate sized tree, up to 16 m in height. The bark of the tree is the well-known Ceylon cinnamon of commerce. The bark of tree consists of volatile oil, commonly known as cinnamon oil, possesses many medicinal properties like antibacterial and antifungal properties. The oil is styptic, emmenagogue, tonic to the liver, useful in inflammation, vomiting and abdominal pains. The oil is a valuable flavouring ingredient used widely in all kinds of confectionary, baked foods, meat seasonings, candies, soft drinks, ketchups, pickles, sauces, beverages, pharmaceutical and dental preparations, mouth rinses etc.

Ocimum kilimandscharicum (Lamiaceae) is a native of Africa and was introduced and cultivated in India and some parts of Turkey. In India, it is cultivated in West Bengal, Assam, Tamil Nadu, Karnataka, Kerala, Dehradun and in North India. It is a woody shrub that can reach 2 m high in warm temperature regions of the tropics but can be propagated by seeds and vegetatively. The plant has pubescent quadrangular branchlets with simple leaves that are opposite and oblong narrows at the base and deeply serrated. The leaves accommodate volatile oil, which represents the essence of plant. In Indian System of Medicine (Ayurveda), oil of O. kilimandscharicum, commonly known as kapur tulsi oil, has been used as an anti-inflammatory, indigestion, insecticidal, mosquito repellent, aromatic and antimicrobial.

Gas chromatography has been the method of choice for analysis of volatile oils for many years. The constituents of volatile oils are identified using a combination of different GC techniques, including GC in combination with mass spectrometry. GC-MS is the most powerful technique used to identify the components present in the oils. In the present study, the leaves of O. kilimandscharicum and bark of C. zeylanicum were collected, identified and authenticated, and subjected to hydrodistillation for extraction of their volatile oils. Both the oils were studied for their organoleptic and physical properties, and analysed by GC-MS method to know their chemical composition.

MATERIALS AND METHODS

Collection of plant material

The authenticated plant material for extraction of kapur tulsi oil was collected from Medicinal Plant Garden of University Institute of Pharmaceutical Sciences, Panjab University, Chandigarh, India.
The powdered bark of *Cinnamomum zeylanicum* and fresh leaves of *Ocimum kilimandscharicum* were subjected to hydrodistillation for extraction of volatile oils in clevengers apparatus individually for 5-6 hours. The % age yield of extracted oils was estimated, Table 1.

Organoleptic evaluation of extracted volatile oils was done and the characters were studied. The solubility of oils in different solvents such as water, alcohol, chloroform and petroleum ether was also determined. Table 2. The oils were clear and colourless to yellow when extracted freshly. They had strong aromatic and characteristic odour and greasy to touch. The oils were insoluble in water and soluble in organic solvents. The test oils showed specific gravity within the range of prescribed specific gravity of majority of the volatile oils. These physical constants served as a means of accessing the purity and quality of the volatile oils as well as their identification.

The cinnamon oil and kapur tulsi oil were subjected to GC-MS analysis to study their chemical composition.
Table 4: Components of kapur tulsi oil identified by its GC-MS analysis

<table>
<thead>
<tr>
<th>Components Identified</th>
<th>Retention time</th>
<th>Peak area (%)</th>
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<tbody>
<tr>
<td>Camphor</td>
<td>15.53</td>
<td>12.25</td>
</tr>
<tr>
<td>Eugenol</td>
<td>16.36</td>
<td>14.33</td>
</tr>
<tr>
<td>1-8 Cineole</td>
<td>30.69</td>
<td>7.20</td>
</tr>
<tr>
<td>Limonene</td>
<td>31.28</td>
<td>13.08</td>
</tr>
<tr>
<td>α-Pinene</td>
<td>32.86</td>
<td>46.14</td>
</tr>
<tr>
<td>Camphene</td>
<td>35.48</td>
<td>7.0</td>
</tr>
<tr>
<td>β-Mycene</td>
<td>27.41</td>
<td>1.94</td>
</tr>
<tr>
<td>α-Terpinene</td>
<td>29.24</td>
<td>1.78</td>
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</table>

**CONCLUSION**

The volatile oils of *Cinnamomum zeylanicum* and *Ocimum kilimandscharicum* have passed all the physical parameters of the essential oils. This is the most searching examination that will confirm or reject the authenticity of oils and also reveal any adulteration with foreign substances. Qualitative and quantitative analysis of volatile compounds was also performed by GC-MS technique. The results obtained may help to find the active ingredients and provide a useful chemical basis for future research.

**REFERENCES**


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