INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: https://www.ijpsjournal.com

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Review Article

Extraction Of Essential Oil From Leaves Of Some Members Of Family Verbenaceae

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ARTICLE INFO

Received: 12 May 2024
Accepted: 14 May 2024
Published: 15 May 2024
Keywords:
Vitex negundo Linn, Lantana camara Linn, Essential oil
DOI:
10.5281/zenodo.11196326

ABSTRACT

Essential oils constitute a major class of natural products. They possess various biological activities like anti-inflammatory, anti-oxidant, analgesic, and antimicrobial activities and have immense application in food, cosmetics and pharmaceutical industries. In the current study, the essential oils were extracted from Vitex negundo Linn, Lantana camara Linn using clavenger apparatus. The oil yield was calculated based on the volume of the extracted oil per 200 g of the powdered leaves. The yield of essential oil from 200 gm dried powder of V. negundo is 0.35 % whereas from 200 gm dried powder of L. camara is 0.50 % at the extraction temperature of 100ºC and extraction time of 7 hours.

INTRODUCTION

Since ancient times, medicinal plants have been a significant source of compounds used to treat various diseases. The widespread perception that natural medicine is superior over synthetic drugs is primarily responsible for the rise of interest in natural supplements throughout the past ten years. Essential oils are a broad category of natural products that are significant sources of flavouring compounds and aromatics for industrial, food, beverage fragrance and therapeutic uses[1,2]. Essential oils are the highly concentrated, volatile and aromatic molecules that plants produce. These essences evaporate quickly and are responsible for the lovely aromas that plants emit. A specific type of plant is used to extract each of these complex unique liquids. Essential oils have a complicated chemistry since they are composed of several chemical components found in nature. While some of them have a significant role, others don't. The chemical structure of the components found in essential oils is based on hydrogen atoms holding carbon atoms together and making them organic. Atoms of oxygen are also occasionally found,

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

along with atoms of nitrogen and sulphur [3,4]. In the present-day perfume business, solvent extraction is the most widely used method of extracting aromatic compounds. Wax and pigments are dissolved together with the necessary aromatic compounds by immersing and stirring the raw components in a solvent. Usually, extraction solvents that readily remove at the conclusion of the operation, dissolve the valuable chemicals, and have the required boiling point. Essential oils are extracted using many different kinds of solvents, including water, petroleum ether, benzene, acetone, hexane, and methanol [5,6,7,8,9]. The Verbenaceae family plant is popularly referred to as five-leaved chaste tree (English) and Nirgundi (Hindi). Vitex negundo L., also known as Sambhalu, is a fragrant, three meter tall, big shrub or small, thin tree with quadrangular branches. Vitex negundo Linn, sometimes called the chaste tree with five leaves. Herbal medicines, the ancestors of modern medicine have been used since ancient time to treat ailments, diseases, and psychological issues. Leaves, bark, berries, flowers and roots are just a few of the natural materials used to make herbal treatments. The plant is widespread in tropical Africa, Madagascar, China, the Philippines, Afghanistan, Ceylon, and India. The plant can also be found in Burma, Bengal, and Southern India.Waste areas near villages, riverbanks, damp areas and deciduous woodlands are frequent places to find it. The plant is beneficial in treating eye diseases, inflammation, leucoderma, enlargement of the spleen, bronchitis, asthma, biliousness and difficult teething in children. It also has a pungent, bitter and caustic taste and is hot, astringent, stomachic, and anthelmintic. The antidote to snake poison is the root. The root is said to have tonic, febrifuge, and expectorant properties. It can be used to treat a variety of conditions, including rheumatism, arthritis, dyspepsia, colic, leprosy, verminosis, flatulence, dysentery, urinary problems, wounds, ulcers, bronchitis, cough, malarial fever, haemorrhoids, dysmenorrhoea, leprosy, diarrhoea and general debility. The plant is said to have antiseptic, alterant, antipyretic, diuretic, emmenagogue, expectorant, carminative, digestive, anodyne, ophthalmic, vulnerary and tonic properties [10]. The leaves are vermifuge, fragrant and tonic. When treating catarrhal fever, which manifests as heaviness of head and dullness of hearing, a decoction of Nirgundi leaves is used together with long pepper. A pillow stuffed with the leaves of Nirgundi is placed under the head for relief of headache. The juice of the leaves is said to have the property of removing foetid discharges and worms from ulcers. Diarrhoea, cholera, fever, haemorrhages, hepatopathy, and heart diseases can all benefit from the flowers. Leaves and bark are useful in scorpion stings, seeds are considered useful in eye diseases in the form of anjan [11, 12, 13]. For rheumatism and irritable bladder syndrome, a tincture of root bark in one to two doses is advised. As a demulcent for dysentery, powdered root is recommended for piles. Leprosy, worms, boils, rheumatism, dyspepsia, and colic are all treated with root. spreading swelling from acute rheumatism in the joints and restricted gonorrhoea in the testes, the leaves are discutient and helpful. As a vermifuge, the dried fruit works.Fruit is emmenagogue, nervine, and cephalic; dried fruits have vermifuge properties; flowers are astringent and cold [14, 15, 16]. Among the Verbenaceae family of plants, the genus Lantana camara L. is significant for its medicinal, decorative, and essential oil production properties. It is also known by another name, red sage and is a common garden attractive plant [17]. The plant grows up to 2000 metres above sea level in tropical, subtropical, and temperate regions [18]. It is a woody stalk with blooms that are red, yellow, white and pink in addition to having spines or prickles on it [19]. L. camara has traditionally been utilised as a remedy to treat a wide range of diseases, including

rheumatism, asthma, eczema, measles, chickenpox, cancer, tumours, wounds and tetanus [20].

Extraction of essential oil

300g of dried leaves powder of Vitex nigundo Linn and Lantana camara were mixed together with 1000 mL of distilled water in a round flask of Clavenger apparatus. The operating temperature was 100°C as the boiling point of water. The extraction was done for 7 hours. The essential oil was then separated from its hydrosol by using petroleum ether as a solvent [21].

RESULTS

The yield of essential oil of leaves of Vitex nigundo and Lantana camara calculated using the following equation:

1. Oil yield (%) = (Volume of obtained oil (ml))/(weight of powdered sample (g)) × 100
2. Oil yield (%) of essential oil of leaves of Vitex negundo = (0.7 (ml))/(200 (g))× 100= 0.35 %
3. Oil yield (%) of essential oil of leaves of Lantana camara = (1 (ml))/(200(g))× 100=0.50%

CONCLUSION

The yield of essential oil from 200 gm dried powder of V. negundo is 0.35 % whereas from 200 gm dried powder of L. camara is 0.50 %. Essential oils have been used by human beings since ancient times for various therapeutic purposes. Externally and internally, described in the pharmacopoeia, traditional systems of medicine and reported in folk medicine. They are known for their therapeutic action such as local stimulants, carminatives, diuretics, mild antiseptic, local irritants etc. they are also used as spices and flavoring agents, confections, beverages, pharmaceuticals, cosmetics and also in the perfumery industry. Essential oils have been traditionally used for treatment of infections and diseases all over the world for centuries. Essential oils from different plant species possess ovicidal, larvicidal and repellent properties against various insect species and are regarded as environmentally compatible pesticides. Volatile compounds from plants, especially essential oils have been demonstrated to possess potent antifungal, antibacterial, insecticidal and nematocidal activity [22,23,24,25,26].

ACKNOWLEDGEMENT

The author would like to express thankful to Principal and Management of Chikitsak Samuha's, Sir Sitaram and Lady Shantabai Patkar College of Arts and Science and V.P. Varde College of Commerce and Economics for providing necessary facilities in the college. Also, thankful to RUSA for granting the funds for the project.

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HOW TO CITE: Ankita More, Sachin Bhagat, Anil Bhalerao, Extraction Of Essential Oil From Leaves Of Some Members Of Family Verbenaceae, Int. J. of Pharm. Sci., 2024, Vol 2, Issue 1, 693-697. https://doi.org/10.5281/zenodo.11196326