PATCHOLI OIL: A Review

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ABSTRACT

Patcholi oil is obtained from the dried leaves of *Pogostemon cablin.* The aim of this review article is to cover recent developments in phytochemical and pharmacological aspects of the oil. It is being used to treat inflammation, bacterial and fungal infections, cancer and skin problems. Patcholi oil contains concentration, delta-guaiene, azulene, trans caryophellene, seychellene, naphthalene, cycloheptane and caryophyllene, methanoazulene, germacrene, alpha patchoulene, beta patchoulene and Patcholi alcohol. This review article is an attempt to compile and document the information on different aspect of Patcholi oil and highlight the need for future research and development.

Keywords: *Pogostemon cablin,* patchouli ,phytochemical, pharmacological potential

INTRODUCTION

Patchouli oil got from plant *Pogostemon cablin* has been utilized to eliminate moistness, assuage summer warmth and outside condition, and as an enemy of emetic and hunger energizer. The oil is remembered for the arrangements of Indian Ayurvedic medicines, for example, Rasa, Guna and Virya. The business significance of patchouli oil it has an amazing sweet, herbaceous sweet-smelling, hot aroma. Patchouli oil is having gigantic business potential in the market worldwide as a result of its exceptional flavor as well as aroma and furthermore organic exercises[1].

PHARMACOGNOSY

It is procured from the plant known as *Pogostemon cablin* belonging to family Lamiaceae, regularly called the "mint" or "deadnettle" family through steam refining of the dried leaves[2].

Morphologically, the plant of patchouli oil is a strong enduring spice adjusted to hot and damp climatic conditions. The plant leaves are lobed and have plentiful hairs on the posterior part. Oil is present in leaves in their glandular trichomes. The plant develops as a rugged lasting spice,

have erect stems stretching for about 75 centimeters in stature and bearing little, and have pale pink-white coloured blossoms [1,2].

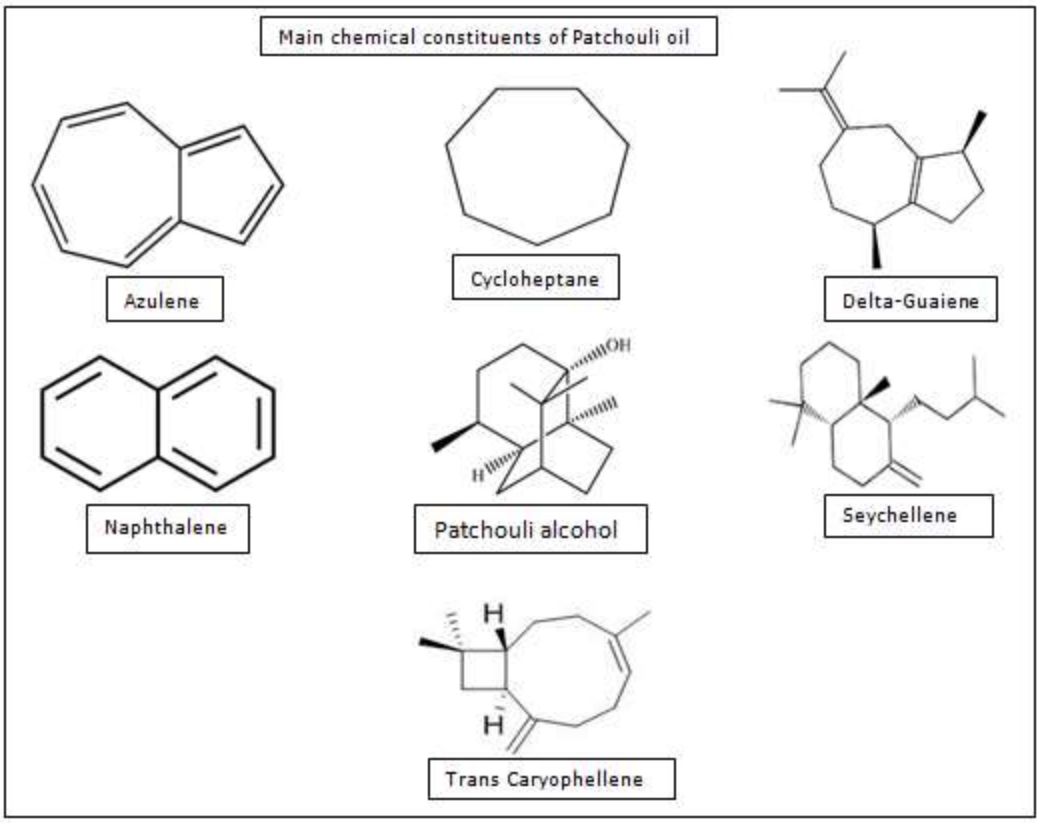
It is local in many countries of Asia as in China, Philippines, Cambodia, Myanmar, Maldives, Japan, Seychelles, Madagascar, Taiwan, Malaysia, Thailand, Vietnam, South America, Indonesia, India, Mauritius, Pakistan and the Caribbean. Around 25 types of the plant Pogostemon are accounted for to happen in India. The dry leaves of plant Pogostemon Cablin on steam refining yield a fundamental oil called the patchouli oil. The oil is broadly utilized in the assembling of cleansers, fragrances, body creams and cleansers[2].

Common Names

Patchouli oil is otherwise called patchouly, tamala patra in Sanskrit, patche tene in Kannada, patcholi in Hindi, patchapan or patcha in Marathi, pacchilai in Tamil, patchilla in Malayalam, guang hou xiang in Chinese, phimsen in Thailand, nilam in Malaysia and Indonesia [1].

CHEMICAL CONSTITUENTS

Altogether an investigation uncovered that the patchouli oil contains 16 segments in which the primary part were patchouli alcohol in 42.75% concentration, delta-guaiene in 28.30% concentration, azulene in 20.48% conc, trans caryophellene in 11.84% conc, seychellene in 10.77% conc, naphthalene in 8.02%conc, cycloheptane in 6.02% conc and caryophyllene in 5.73% conc and rest were methanoazulene, germacrene, alpha patchoulene, beta patchoulene, Patchoulol these were accessible in low sums[2,3]. Upon molecular distillation, Patcholi alcohol is obtained from patchouli oil [4–6]. Pogostemon cablin oil contained alpha-patchoulene (3.3%), beta-patchoulene (4.2%),patchouli alcohol (23.2%) and alpha-guaiene (14.6%)[7]. Gamma-curcumene is another component obtained from patchouli oil from the plants of *Pogostemon cablin* cultivated in Java and Indonesia[8]. α-pinene, Limonene, β-patchoulene, β-elemene, Seychellene, β-caryophyllene, β-pinene, α-Guaiene, humulene, α-patchoulene, Cycloseychellene, Germacrene, Aciphyllene, α-bulnesene, Caryophyllene oxide and Pogostol were determined using gas chromatography-mass spectrometry from Patcholi oil[9].



PHARMACOLOGICAL PROPERTIES

1. **Anti inflammatory properties**

β-Patchoulene was explored on exploratory mice models of intense irritation, that include xylene-initiated ear edema, acidic corrosive actuated vascular penetrability and carrageenan-prompted paw edema.

It was clear that β-PAE evoked a noteworthy portion subordinate restraint of ear edema actuated by xylene, paw edema prompted via carrageenan and stifled the expansion of vascular porousness inspired by acidic corrosive.

Histopathological examination demonstrated that β-PAE could particularly diminish the cell invasion in paw tissue. β-PAE diminished the malondialdehyde level and myeloperoxidase action in edema paw. Carrageenan-initiated production of cytokines such as TNF-α, IL-1β, IL-6, PGE2 and nitric oxide (NO) [10,11].

2 **Antibacterial**

Antimicrobial tests were done on patchouli oil with the help of antimicrobial test in vitro and molecular docking technology in which 5 biological enzyme macromolecules were selected as target molecules that are required by the bacteria in the process of biosynthesis and also five antibiotics rifampicin, trimethoprim, sulfadiazine, ciprofloxacin and benzylpenicillin were selected as reference compounds. The results showed that 14 compounds in patchouli oil can well inhibit the bacterial biosynthesis through various means with 5 compared compounds [6].

3. **Antifungal**

The patchouli oil at the concentration of 100 μg/mL blended with oils of cedarwood, lemongrass and thyme restrained development mycelial *of C. albicans* . Patchouli alcohol at conc 44.52% was the main ingredient of the oil that was responsible for antifungal action against a populace of *Aspergillus* animal groups.[1]

4. **Antiviral**

Customary drugs from spices, including patchouli were evalauted for subterranean insect flu viral action. The results showed that methanolic concentrate of patchouli leaves in the concentration of 10 μg/mL can repress flu infection H1N1 up to 99.8% and the IC50 esteems was assessed to be 2.6 μM. The in vivo enemy of flu infection impact of patchouli liquor was contemplated utilizing mouse and the examination affirmed that patchouli alcohol(20 mg/kg - 80 mg/kg) through oral route expanded security against flu infection contamination through improved resistant reaction[1,12].

5. **HIV/AIDS Treatment**

Essential oils in form of Aromatherapy are used as part of nursing care in many countrie including Switzerland, Australia, Germany, the United Kingdom, Canada, the United States. Essential oils are use in HIV/AIDS for specific opportunistic infections. Aromatherapy helps in altering way of thinking of chronic pain, also helps in maintaining skin integrity, and is a stress buster.

In French medical clinics, patchouli oil was utilized as reasonable antimicrobial specialists to treat explicit deft contaminations brought about by *C. albicans, C. neoformans, methicillin-safe S. aureus and H. simplex* sort I and II found in AIDS patients [2].

6. **Antiemetic**

Hexane concentrates from patchouli leaves indicated against emetic movement in youthful chicks. Patchoulol exhibited hostile to emetic properties at dosages of 50–70mg/kg [1].

7. **Defaecation and Constipation**

In a test to examine the impact of patchouli oil on defeacation and clogging utilizing two mouse models; one with flabby blockage and another having obstruction due to bring down stringy food admission. The results proved that the quantity of dung and its dry weight expanded in both models in the wake of smelling the patchouli oil fragrance. It was observed that olfactory neurotransmission plays an important role for conquering blockage in mice [1].

8. **Fibrinolysis**

fibrinolytic movement of patchouli oil was considered utilizing in vitro enzymatic responses, for example, fibrin development from fibrinogen by thrombin and fibrin goal by urokinase. The examination uncovered effective patchouli [1].

9. **Antioxidant**

Patchouli oil demonstrated a productive free radical searching action and hindered the oxidation of hexanal to hexanoic corrosive. The oil forestalled photoaging by showing antioxidative property and kept up skin auxiliary trustworthiness brought about by UV illumination [15]. Lipopolysaccharides present on the external film of Gram-negative microbes are answerable for causing mastitis and on investigation it indicated that patchouli alcohol was effective in hindering TNF-α, IL-6, and IL-1β creations. It was likewise seen that patchouli alcohol weakened mammary histopathologic changes; sopatchouli liquor can be a remedial for forestalling mastitis [13].

10. **Antimutagenic**

In Salmonella typhimurium TA1535/pSK1002, umu quality articulation because of SOS reaction invigorated because of mutagenic operator, 2-(2-furyl)- 3-(5-nitro-2-furyl)acrylamide was stifled by patchouli oil methanolic extricate.[1]

11. **Effect it produces on Cancer Cells and the Immune System**

A study was conducted to determine the immunomodulatory activity of Patchouli Alcohol on Kunning mice. The result showed that oral administration of Patchouli alcohol at concentration of 40-80 mg/kg, increased the phagocytic index, compared with prednisone acetate group to a significant value. The Patchouli alcohol at concentrations 80 mg/kg cause increased production of circulating serum IgM and IgG. It showed that patchouli alcohol have immunomodulatory properties which results by suppression of cellular immune response and activation of mononuclear phagocytic system and humoral immune response [3].

12**. Skin Diseases**

The patchouli oil at 12% fixation, successfully treated skin diseases and scent in patients enduring ulcers, torn skin and weight wounds. The mending length was significantly diminished by the utilization of basic oils [14].

13. **Obesity**

Pogostemon Essential oil (patchouli oil) inhalation (0.3-1%) greatly improved metabolic parameters in the obesity-induced rats [15].

14. **Insecticidal Activity**

Patchoulol the primary component of oil demonstrated harmfulness and repellency towards Formosan underground termites. Effective use of patchoulol to the dorsum partition indicated uncommon tissue harm inside the exoskeleton of the termite. Patchouli oil demonstrated solid repellency to three types of metropolitan ants and had solid herbal insecticidal action and especially, patchouli liquor had the best anti-agents action against *A. aegypti*, *A. stephensi and C. quinquefasciatus* mosquito nibbles. Phal et al. assessed home grown mosquito curls *against A. aegypti* mosquito and found a mix of patchouli and valamus (75:25) displaying noteworthy mosquitocidal action with rice husk, corn cob and sawdust-based loops [1].

14. **Fragrant healing**

In fragrant healing, patchouli oil is utilized to help decrease pressure, sleep deprivation and tension. It's wine-like inebriating fragrance capacities as a Spanish fly and assists with honing knowledge, improve focus, and give understanding. Profoundly, it is utilized in incense sticks as it assists with making a quieting environment. In ordinary grown-up subjects, the aroma inward breath impacts on thoughtful exercises was concentrated by estimating the serum catecholamine content and checking vacillations in pulse. In typical subjects, a diminished thoughtful action after inward breath of aroma was observed. A fragrance based treatment oil mix of patchouli, with jasmine, ylang-ylang, sandalwood, rose and vetiver can rouse lucidity and an amicable progression of vitality that connects with thyroid organs and equalizations hormonal discharge. Patchouli oil impacts cerebral capacities including quieting, narcotic and inspiring[16].

The disintegrated blends of fundamental oils (patchouli, orange, ylang, rosemary, basil, peppermint, geranium, bergamot, rosewood, chamomile and jasmine) decreased upset conduct among 10 dementia patients. The circulatory strain, beat rate, stress record and mind waves were diminished subsequent to sniffing patchouli oil smell. It recommends patchouli oil smell improves mind-set and have remedial impacts when its aroma is breathed in by people. The impact of smell was because of its principle compound, patchouli liquor[2]. Fragrance based treatment (inward breath, packs, showers and back rubs) can assist with overseeing pressure and decrease impression of constant torment [15].

CONCLUSION

This review article concluded that Patcholi oil contains a variety of phytocomponents which are responsible for various pharmacological potential. However, further investigation must be carried out to isolate the phytocomponents and establish a pharmacological agent for treatment of different diseases from plant derived compounds.

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