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Review on Pharmacological Activity of Cymbopogon Citratus

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ABSTRACT

Cymbopogoncitratus belonging to the family Gramineae is an herb worldwide known as lemongrass. The prefix 'lemon' owes to its typical lemon like odor, which is mainly due to the presence of citral, a cyclic monoterpene. Cymbopogoncitratus a fast growing, perennial aromatic grass is native to South India and Sri Lanka, now widely cultivated in the tropical areas of America and Asia. Freshly cut and partially dried leaves are used medicinally and are the source of the essential oil. The plant is used extensively in Ayurvedic medicine. Studies indicate that Cymbopogoncitratus possesses various pharmacological activities such as anti-amoebic, anti-bacterial, anti-diarrheal, anti-filarial, anti-fungal and anti-inflammatory properties. Various other effects like anti-malarial, anti-mutagenicity, anti-mycobacterial, anti-oxidants, hypoglycemic and neurobehavioral have also been studied. These results are very encouraging and hence this literature review was intended to study about the plant more extensively to confirm these results and reveal other potential therapeutic effects.

Keywords: Cymbopogoncitratus, pharmacological activity, essential oil.

Introduction

Cymbopogon citrates staff is popularly known as citronella lawn or lemongrass. This species belongs to the Gramineae family, which comprises roughly 500 rubric and,000 condiment species [1]. Lemon lawn is a tufted imperishable lawn growing to a height of 1 cadence with multitudinous stiff leafy stems arising from short rhizomatous roots. It has an profitable lifetime for about 5 times [2]. The splint- blade is direct, phased at both ends and can grow to a length of 50 cm and range of1.5 cm. The splint- jacket is tubular in shape and acts as a pseudostem. Leaves are long, glaucous, green, direct tapering overhead and along the perimeters. This factory produces flowers at progressed stages of growth. Again, flowering has noway been observed under civilization due to rapid-fire harvesting time. The inflorescence is a long shaft about 1 cadence in length. Flowers borne on decompound spatheate; panicles 30 to over 60 cm long. The rhizome produces new suckers that extend vertically as farmers to form thick clumps [3, 4].

Ethnobotany: Cymbopogoncitratus is a great interest due to its commercially precious essential canvases and extensively used in food technology as well as in traditional drug. People currently are more apprehensive on health issue due to the emergence of new conditions. Treatment using factory-grounded drug appears to be an indispensable approach due to the adverse goods associated with the use of synthetic medicines [5]. Lemongrass is a folk remedy for coughs, elephantiasis, flu, gingivitis, headache, leprosy, malaria, ophthalmic, pneumonia and vascular diseases. Studies have shown that the bomb lawn has antibacterial and antifungal parcels. Mixed with pepper, it's a home remedy for

menstrual troubles and nausea. The bomb lawn is a good cleaner that helps to detoxify the liver, pancreas, order, bladder and the digestive tract. It cuts down uric acid, cholesterol, redundant fats and other poisons in the body while stimulating digestion, blood rotation, and lactation; it also alleviates indigestion and gastroenteritis. It's said that bomb lawn also helps ameliorate the skin by reducing acne and pustules and acts as a muscle and towel color. Also, it can reduce blood pressure. A recent study by the Food and Nutrition Research Institute of the department of Science and technology(DOES) showed bomb lawn can help cancer [6, 7].

Fig No.1 *Cymbopogon Citratus*

Phytochemistry and Pharmacology:

The use of medicinal shops is part of a competitive request, which includes medicinals, food, cosmetics, and perfumery requests [8]. The chemical composition of the essential oil painting ofInternational Journal of Herbal MedicineCymbopogoncitratus varies according to the geographical origin, the composites as hydrocarbon terpenes, alcohols, ketones, esters and substantially aldehydes have constantly been registered. Lemon lawn contains active constituents like myrcene, an antibacterial and pain reliever, citronellal, citronellol and geraniol. The essential oil painting consists of, substantially, citral a unpredictable oil painting with strong bomb scent. Citral is a admixture of two stereoisomeric monoterpene aldehydes; the trans isomer geranial (40- 62) dominates over the cisisomerneral (25- 38) and is used In manufacture of scents, colored detergents and conflation of Vitamin A [9, 10].

Anti-microbial exertion The ethanolic excerpts of the leaves of Lemon lawn showed implicit antibacterial property against Staphylococcus aureus. Flavonoids and Tannins set up in the excerpt are responsible for the exertion [11].

Anti-fungal exertion Candida albicans is an important pathogen of mortal infections; also, other species can be associated with some infections. Theanti-fungal exertion of lemongrass and citral against Candida species was studied and the study showed that lemongrass oil painting and citral have a potent in vitro exertion against Candidaspp.[12].

Anti-protozoan exertion The family Trypanosomatidae harbours protozoans that are agents of important ails in humans, creatures and in shops. This family also includes some lower trypanosomatids similar as Crithidia, Blastocrithidia, and Herpetomonas, monoxenous protozoans generally set up in nonentity hosts. The essential oil painting uprooted from Cymbopogon citrates showedanti-protozoan exertion against Crithidiadeanei [13]

Anti-oxidant activity: The role of phenolic acid and flavonoids as natural anti-oxidants and free radical scavenger has been of interest due to their pharmacological behavior. Phenolic acids present in the plant showed the anti-oxidant profile [14].

Anti-diarrhoeal activity: In practice, the whole stalk and the

leaf of lemongrass are boiled and the decoction is drunk to relieve

the diarrhea. In view of its popular use in traditional medicine

system, the anti-diarrheal efficacy of C. citrates stalk decoction and

its main chemical constituent citral, was studied [15].

Anti-mutagenic activity: The ethanolic extract of lemongrass was found to possess anti-mutagenic properties towards chemicalinduced mutation in Salmonella typhimurium strains TA98 and TA100 [16].

Anti-Inflammatory activity: Anti-Inflammatory Activity of Cymbopogoncitratus leaf infusion in lip polysaccharidestimulated dendritic cells was studied and used for the treatment of inflammatory diseases, in particular of the gastrointestinal tract [17].

Anti-malarial activity: In vivo antimalarial activity of essential oil obtained from Cymbopogoncitratus on mice infected with plasmodium berghei was studied [18].

Anti-nociceptive activity: Essential oil of C. citrates possesses a significant anti-nociceptive activity. Comparing the results Obtained with three different experimental models of nociception viz., hot-plate, acetic acid-induced writhing in mice, and formalin test, essential oil acts both at the peripheral and central levels [19].

Anti-hepatotoxic activity: The aqueous leaf extracts of Cymbopogon citrates showed anti-hepatotoxic action against cisplatin induced hepatic toxicity in rats. Hence the extracts have the potential to be used for the management of hepatopathies and as a therapeutic adjuvant in cisplatin toxicity [20].

Traditional uses of lemon grass Leaves of lemongrass are reported to have good quantity of oil and this oil is reported to have antimicrobialcarminative, fungicidal, analgesic, antiseptic, astringent, bactericidal and antidepressant properties. It can be used for curing of ringworm and athlete's foot disease due to its ability to act as antibiotic as well as antiseptic properties. Lemongrass possesses good inhibitory activity against methicillin-resistant Staphylococcus aureus (MRSA) infection. It can be used for colitis indigestion and gastroenteritis ailments. It helps relieves the symptoms of headache, body ache, nervous exhaustionand stress-related condition. Its infusions are often made useful in infections such as sore-throats, laryngitis, bronchitis etc [21] Alves et al. reported its use for cure of gastrointestinal problems [22]. Decoction of lemongrass leaves is used as diaphoretic in

fever [23]. Studies on lemongrass by researchers have indicated that it revitalizes the body and enhances good health. It stimulates digestion and inhibits chemical-induced carcinogenesis by modulating xenobiotic-metabolizing enzymes in the liver and intestine [24]

Pharmacological potential of lemon grassAntioxidant activity

Latest research investigations have proved that antioxidant potential of plants is attributed to the presence of polyphenols, flavonoids, lignins, alkaloids, terpenoids, carotenoids, vitamins etc. They help in maintaining the nutritional quality and shelf life of foods by inhibiting lipid oxidation, minimizing

rancidity, and removing toxic oxidative products[25, 26, 27, 28] Similarly, phenolic compounds play important role in antioxidant activity and resistance against pests and other species dissemination. Phenolic compounds helps in scavenging of reactive oxygen species (ROSs) which include hydrogen peroxide (H2O2), superoxide anion (O2-) and free radicals [29], generated during metabolism in body, hence helps in combating oxidative stress. Due to its reactivity, ROSs damage biochemical components like cell membrane, cellular lipids, proteins and DNA [30]. ROSs are main culprit of atherosclerosis, rheumatoid arthritis and muscle destruction, cataracts, certain neurological disorders, cancer and ageing. Antioxidants have to be present in the body to offer protective mechanism against damaging effects of oxidation process caused by these radicals. Lawrence et al. determined the antioxidant activity of lemon grass essential oil grown in northern Indian plains by using DPPH assay, Nitrogen Oxide assay, reducing power assay and β-carotene bleaching assay. They observed that IC50 values observed for DPPH and NO scavenging method was 0.5 mg/ml and 2 mg/ml respectively

Conclusion

Medicinal plants are very important to human beings in preserving our health. There is a growing interest in the pharmacological evaluation of various plants used in Indian traditional system of medicine. Lemongrass is a great interest due to its commercially valuable essential oils and widely used in food technology as well as in traditional medicine. Owing to the new attraction for natural products obtained from lemon grass a proper phytochemical and Pharmacological study is required, which shall open new pharmacological avenues for this magnificent plant which are helpful for clinical experimentation and also in the development of novel drugs.

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