

# LEMONGRASS: A REVIEW ON ITS BOTANY, PROPERTIES, APPLICATIONS, USES AND ACTIVE COMPONENTS

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## ABSTRACT

*Lemon lawn (Cymbopogon citratus), is a member of poaceae family. It's a medicinal factory with composites able of controlling pathogens and adding herbal resistance to pathogenic conditions. Lemongrass is extensively used in the herbal teas and other no as creams and detergents. Lemon lawn essential oil painting is comprised of a high content of citral, which is used as a source for the product of beta carotene and vitamin A etc. Hence, due to the presence of colorful chemical ingredients present in bomb lawn oil painting, it uses in different medicinal diligence for its anti-depressant, analgesic, antipyretic, bactericidal, anti-septic, carminative and tangy parcelsn.*

**Keywords :-** *Lemon lawn, essential oil, citral, flavonoids, Phytoconstituents*

## 1.INTRODUCTION

Cymbopogon citrates, are generally known as Lemongrass is an altitudinous imperishable lawn. It belongs to the rubric Cymbopogon of sweet meadows and contains essential canvases with the fine bomb flavor. In Asia Lemongrass is extensively used as essential element for health. In India, it is use as anodynes for the central nervous system [1]. Lemon lawn is an altitudinous factory having enormous banded leaves with an uneven edge. It has known for its hoarse, sweet, herbaceous and lemony scent. Cymbopogon flexors are astronomically employed in medication of mists curries and teas. This condiment contains comforting character. (Lemon lawn Cymbopogon plexuses) is native sweet-smelling altitudinous sedge. It is a member of the family Placed. It grows in multitudinous corridor of the tropical and sub-tropical South East Asia and Africa. Lemon lawn are Cymbopogon citrates), is a lawn native to Pakistan, India and Sri Lanka [2]. Mitral is one of the significant constituents of the oil painting present in a many species of Cymbopogon with huge ultramodern uses, for illustration, crude material for vitamin A, confectionary and perfumery [3]. Cymbopogon is a rubric of about 55 species, which are indigenus in tropical and semi-tropical areas of Asia and are cultivated in South and Central America, Africa and other tropical countries. These are tug ed imperishable C4 meadows with multitudinous stiff stems arising from a short, rhizomatous rootstock [4,5].

## 2. BOTANY OF LEMON GRASS

Kingdom: Plantae  
 Division: Mangoliophyta  
 Class: Liliopsida  
 Order: Poales  
 Family: Poaceae  
 Genus: Cymbopogon  
 Species: flexuosus [6].



Figure 1: Lemon grass plant.

### Species And Varieties

Its belong to the Family Graminae (Poaceae) and the genus Cymbopogon.

### Synonym(s)

Lemon grass stalk, Andropogon citratus

### Parts used

Leaves and whole plant.

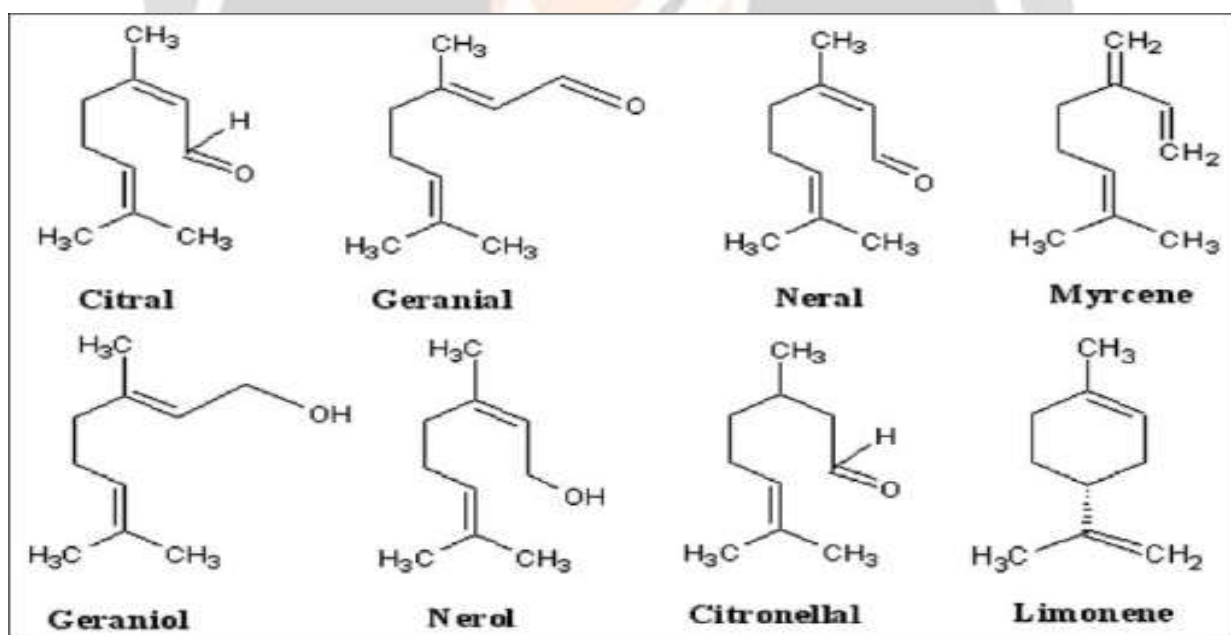
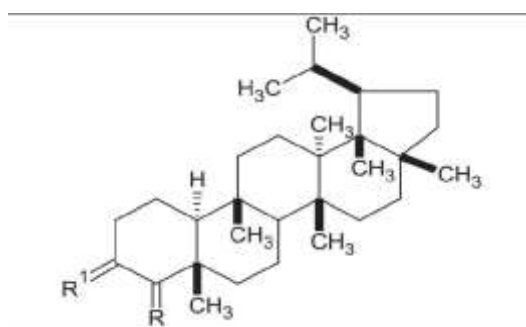


Figure 2: Chemical structure of the major constituents of lemongrass essential oil



**Figure 3:** Chemical structure of cymbopogone and cymbopogonol

Composition of essential oil in cymbopogon citratus [7-10]

Essential oil composition	Percentage of components
Citral $\alpha$	40.8
Citral $\beta$	32
Nerol	4.18
Geraniol	3.04
Citronellal	2.10
Terpinolene	1.23
Geranyl acetate	0.83
Myrcene	0.72
Terpinol	0.45
Methylheptenone	0.2
Borneol	0.1–0.4
Linalyl acetate	0.1
$\alpha$ Pinene	0.07
$\beta$ Pinene	0.04
Limonene	Traces
Linalool	Traces
$\beta$ -caryophyllene	Traces

### 3. HISTORY

Lemon lawn, a perennial factory generally grown in the sub-tropics and tropics, designates two different species, West Indian, *Cymbopogon citratus* and East Indian, *Cymbopogon flexuosus*. Colorful species of the bomb lawn are native to the South East Asia, South Asia and Australia. that is why it is called as the tropical Asia East Indian bomb lawn. (*Cymbopogon flexuosus*) also known as the Cochin or Malabar lawn and is native to SriLanka, India, Thailand and Burma and for the associated West Indian bomb lawn (*Cymbopogon citratus*). Both these species are moment cultivated throughout [11].

The lemon grasses are commercially cultivated in the India, Guatemala, Paraguay, and the People's Republic of China, SriLanka, England and the other corridor of Africa, Indochina, South America and Central America. The shops are grown in the thick clumps up to 2m in periphery and over to 1m long leaves. This rubric is native to the South Asia, Australia and the Southeast Asia. Lemongrass is extensively used in the herbal teas and other non-alcoholic potables in baked food, and also in the sweetmeats. Essential oil painting from the lemongrass is generally used as a scent in the scents and cosmetics, similar as creams and detergents. Citral, uprooted from the oil painting of lemmon lawn, is used in seasoning of soft drinks, in scenting cleansers and detergents, as a scent in the scents and cosmetics, and as a mask for dis-agreeable odors in colorful artificial products. Citral also used in the conformation of ion ones used in perfumery. Lemon lawn a medicinal factory has been considered as a nonentity repellent and carminative. West Indian lemongrass is reported to have strong antimicrobial action. Essential canvases of West Indian lemongrass are acts as a central nervous system depressant. Essential canvases of East Indian lemongrass have strong antifungal action. The unpredictable canvases also have some. mutagenic or pesticidic action. *Cymbopogon nardus* are source of citronella oil. *Cymbopogon martinii* is reportedly toxic to the fungi. Lemongrass has been generally accepted as safe plant extract/essential oil for the human consumption [12]. *Cymbopogon citratus* is an imperishable tropical condiment, noted as lemongrass on account of its bomb scent. Herbal studies are considered abecedarian in

herbal material authentication all over the African mainland. A lot of information is included to insure the identity, efficacy, safety, and quality of named sauces. Regarding the herbal medicines' identity, botanical disquisition is considered a pivotal tool for the proper specification and classification among colorful herbal accouterments. Review in the literature, only many reports [13-15].

#### **4. CULTIVATION OF LEMONGRASS**

Lemongrass flourishes in a wide variety of soil ranging from rich loam to poor laterite. In sandy loam and red soils, it requires good manuring. Calcareous and water-logged soils are unsuitable for its cultivation [16].

##### **4.1 Propagation**

The rate of 13 and sown in the field at the rate of 20 to 25 kg/ ha. Alternately, seedlings can be raised in a nursery in one-tenth of the area of the main field and scattered after 45 days. This system, which requires 3–4 kg seeds ha, is ideal for invariant stage and better growth of the shops. Small colonies of lemongrass can be established by planting of slips. flexuosus is propagated through seeds while. Citrus is propagated through division of clumps [17].

##### **4.2 Irrigation**

In case of failure, the crop should be rinsed every alternate day for about a month after planting. It is recommended that four to six irrigations are given during the period from February to June under North Indian conditions, for optimum yield. Soil humidity administrations maintained at 0.80 IW CPE rate significantly increased crop growth, leafage and essential oil painting yields. Quality of the essential oil painting is not affected by soil humidity administrations [18].

##### **4.3 Harvesting of the herb**

Harvesting is done by cutting the lawn 10 cm above ground position, with the help of sickles. The number of crops in a time depends on the climatological factors similar as temperature, downfall and moisture and position of soil fertility. Generally the crop thrives stylish in sticky condition [19]. Cutting can begin as soon as the night dew has faded from the shops, as wet lawn left for latterly distillation snappily ferments. Sunny days are preferable, since cloudy and misty conditions tend to depress splint oil painting content [20].

#### **5. SEED COLLECTION**

Lemongrass kept for seed purpose are not cut as the yield of seeds from plants subjected to regular harvesting is very low. Generally, the plant flowers during November–December in plains and mature seeds are collected during January–February. A healthy plant produces 10–20 g of seeds. The whole inflorescence is cut and desiccated in the sun and seeds are collected by threshing against the floor or beating with sticks. Fresh seeds are recommended for use in raising a plantation since the seeds lose viability beyond six months of storage. Seed germination is very poor till May, increases up to July and thereafter decreases [21].

#### **6. PHARMACOLOGY OF LEMONGRASS**

Although a lot of pharmacological examinations have been carried out grounded on the constituents present, but a lot further can still be explored, exploited and employed. A summary of the findings of these studies is presented below.

##### **6.1 Antiprotozoan Activity**

Although a lot of pharmacological examinations have been carried out grounded on the constituents present, but a lot further can still be explored, exploited and employed. A summary of the findings of these studies is presented below [22].

##### **6.2 Antibacterial Activity**

Commercial citral, is as mixture of two isomers due to cis-trans isomerism at the C=C bond nearly the aldehyde group obtained from oils of plant sources. The geranial has strong lemon like odor while neral has less. Citral can be used in cosmetic, medicine and food industries. It also has strong antimicrobial activities [23]. These conditioning are shown in two of the three main factors of the oil painting identified through chromatographic



and mass spectrometric styles. While the  $\alpha$ - citral (geranial) and  $\beta$ - citral (neral) factors collectively evoke an antibacterial action on gram-negative and gram-positive organisms, the third element, myrcene, didn't show any observable antibacterial exertion on its own. [24]. The excerpt was also active when the unpredictable oil painting excerpt was oxidized via the active oxygen system [25-28].

### 6.3 Antifungal Activity

Lemon Lawn oil is active against like dermatophytes such as *Trichophyton mentagrophytes*, *T. rubrum*, *Epidermophyton floccosum* and *Microsporum gypseum* [29].

### 6.4 Anti-inflammatory Activity

The hot water excerpt of the dried leaves administered intragastrically to rats was active when compared with carrageenin- convinced pedal edema [30].

### 6.5 Antimycobacterial exertion

The essential oil painting in agar plate was active on *Mycobacterium smegaris* [31].

### 6.6 Antinociceptive Effect

The essential oil painting of *Cymbopogon citratus* possesses a signify cannot Antinociceptive exertion Comparing the results attained with three different experimental models of nociception (hot-plate, acetic acid-convinced writhings and formalin test), we can presume that the essential oil painting acts both at the supplemental and at the central situations [32].

### 6.7 Antiprotozoan exertion

A cure-dependent Anti-protozoan effect of the essential oil painting of *Cymbopogon citratus* could be observed on two strains of *Crithida deanei* [33].

### 6.8 Ascaricidal exertion

The fresh splint essential oil painting has an ascaricidal exertion [34].

### 6.9 Free Radical Scavengers and Antioxidant Effects

Methanol, MeOH/ water excerpts, infusion and decoction of *Cymbopogon citratus* were shown to have free revolutionary scavenging effects by measuring the bleaching of the 1, - diphenyl-2-picryl-hydrazyl (DPPH) revolutionary, scavenging of the superoxide anion and inhibition of the enzyme xanthine oxidase and lipid peroxidation in mortal erythrocytes [35].

## 7. CONCLUSIONS

*Cymbopogon citratus* is native to Sri Lanka and South India, and is now widely cultivated in the tropical areas of America and Asia. The plant is used as a fragrance and flavoring agent and in folk medicine as an antispasmodic, hypotensive, anticonvulsant, analgesic, antiemetic, antitussive, antirheumatic, antiseptic and treatment for nervous and gastrointestinal disorders and fevers. *Cymbopogon citratus* contains various phytoconstituents such as flavonoids and phenolic compounds, terpenoids and essential oils, which may be responsible for the different biological activities. Hence, we can isolate some pure phytopharmaceuticals, which in turn can be used as lead molecules for synthesizing the novel agents having good therapeutic activity. With regard to the development of quality herbal medicine standardization of the extracts, psychopharmacology of different extracts, isolation and characterization of active phytopharmaceuticals, explication of the medium of action of the insulated composites and clinical trials of the composites are important demanded. In the changing global script, the interest toward shops with medicinal value is adding mainly in the primary healthcare system both in the developed and in the developing countries. Thus, the information will help scientists and experimenters to screen the composites responsible for different bioactivities and to interpret the molecular medium of action

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