

# An Overview of Lemongrass (*Cymbopogon citratus*) and its Essential Oil Extractions

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## EDITORIAL

*Cymbopogon citratus*, Stapf (Lemon grass) is a widely used herb in tropical countries, especially in Southeast Asia. It represents one of the most sourced plants in the world because of its distribution and application. The plant also contains reported phytoconstituents such as phenolic compounds and flavonoids, which consist of luteolin, quercetin, isoorientin 2'-O-rhamnoside, apigenin and kaempferol. Studies indicate that *Cymbopogon citratus* possesses various pharmacological activities such as antibacterial, anti-amoebic, anti-filarial, antidiarrheal, anti-inflammatory and anti-fungal properties. Various other effects like antimalarial, anti-mycobacterial, anti-mutagenicity, hypoglycemic, antioxidants and neurobehavioral have also been studied. These results are very encouraging and specify that this herb should be studied more extensively to confirm these results and reveal other potential therapeutic effects.

*Cymbopogon citratus*, Stapf (Lemon grass) is commonly used in teas, soups and curries. It is also suitable for poultry, fish and seafood. The plant is used as a fragrance and flavoring agent and in folk medicine as an antispasmodic, hypotensive, anticonvulsant, analgesic, antiemetic, antitussive, anti-rheumatic, antiseptic and treatment for nervous and gastrointestinal disorders and fevers. It also improves levels of sugar and cholesterol in the blood, stimulates the uterus and menstrual flow, and has antioxidant properties.

The essential oil of the plant is used in aromatherapy. Upon steam distillation of dried leaves, yellowish-colored, strongly fragrant liquid called lemongrass oil is obtained, which has properties attributed to its strong chemical composition. The active compounds identified in Lemongrass (*Cymbopogon citratus*) are mainly terpenes, alcohols, ketones, aldehyde and esters. Some

of the reported phytoconstituents are essential oils that contain Nerol Geraniol, Myrcene, Geranyl acetate, Citronellal, Citral a, Citral b, Terpinolene and Terpinol Methylheptenone. Its use as an alternative food preservative and the effectiveness of the essential oil depends on the target pathogen. The essential oil was obtained by hydro-distillation of the leaves dried by every treatment, and was analyzed by capillary GC and GC/mass instruments. Oven drying gave the highest essential oil percentage (2.45%) compared to shade-drying (2.12%) and sun-drying methods (2.10%). Eighteen components were identified in the essential oil of fresh and dried *C. citratus* leaves obtained by different drying methods, including geraniol (citral-a), neral (citral-b) and myrcene as main components. The drying methods had a marked effect on the proportion of the various components.

The chemical composition of the essential oil of *Cymbopogon citratus* varies according to the geographical origin, the compounds as hydrocarbon terpenes, alcohols, ketones, esters and mainly aldehydes have constantly been registered. The essential oil (0.2-0.5%, West Indian lemon grass oil) consists of, mainly, citral. Citral is a mixture of two stereoisomeric monoterpenic aldehydes; the trans isomer geraniol (40-62%) dominates over the cis isomer neral (25-38%).

Flavonoids and phenolic compounds in *Cymbopogon citratus* consists of luteolin and its 6-C and 7-O-glycosides, isoorientin 2'-O-rhamnoside and isolation of the flavonoids quercetin, kaempferol and apigenin from the aerial parts. The phenolic compounds elmicin, catechol, chlorogenic acid, caffeic acid and hydroquinone are also isolated from the plant.

These results are very encouraging and indicate that this herb should be studied more extensively to confirm these results and reveal other potential therapeutic effects.

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