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Short Communication

# Key Concepts Elucidating the Pharmacological Actions of Citrus Genus

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## DESCRIPTION

Due to its methods for both preventative and therapeutic measures, traditional medical systems like Ayurveda, Homeopathy, etc., are becoming more and more well-liked and interesting across the world. Traditional methods utilize components that are naturally occurring in the environment. The majority of these compounds not only have medicinal benefits but also nutritional ones. According to epidemiological data, nutrition has a significant impact on human health and the management of a number of chronic conditions, such as hyperlipidemia and cardiovascular diseases [1,2]. There are 130 genera in the seven subfamilies of the Citrus genus (Rutaceae), which produces several significant fruits and essential oils. Carotenoids, coumarins, folate, and flavonoids are all potential sources of vitamin C in the fruits of this genus. They are regarded as a crucial component of the diet. According to reports, vitamin C has antioxidant and antiscorbutic properties.

### Anti-oxidant activity

Due to alterations in motor coordination in naloxone-treated Swiss albino mice, *C. limon* essential oil has demonstrated antioxidant activity in reducing lipoperoxidation and has an antinociceptive effect through central inhibitory pathways [3]. Additionally, it has a sizable anti-oxidative protective effect on the mouse hippocampus during neurodegenerative disorders. By balancing the levels of oxidative stress, regular use of lemon essential oil dissolved in grape seed oil may help prevent skin conditions associated to lifestyle choices.

### Antiulcer activity

In chronic stomach ulcers caused by acetic acid, lemon juice had a negligible ulcer healing effect and augmented the effects of pantoprazole and ranitidine. The anti-secretory and antiulcer effects of the juice were seen in pyloric ligated rats. In ethanol-induced, stress-induced, and indomethacin-induced stomach ulcers, both dosages of lemon juice significantly reduced the severity of the ulcers [4]. In duodenal ulcers caused by cysteamine, lemon juice also decreased the size of the ulcer. Lemon juice increases the antiulcer effects of pantoprazole and a ranitidine when taken together. In the ethanol-induced lesion model, the essential oils of *Citrus lemon L.* (250 mg/kg) and limonene (177 mg/kg) significantly protect the stomach mucosa.

### Anthelmintic and insecticidal activity

Comparative tests on *Citrus reticulate* and *C. sinensis* as larvicides against *Aedes albopictus* were conducted in a Research. The results showed that *C. sinensis* had the highest limonin concentration (LC50), percentage of death (97%) and lethal time (LT50) (18.49 h), followed by *C. reticulate* with LC50 (377.4 ppm), percentage of mortality (88%) and LT50 (18.49 h) (31 h). In comparison to fresh diluted fruit juice, fresh *C. aurantium* fruit juice was shown to have promising anthelmintic efficacy against the Indian earthworms *Pheritima posthuma*. According to reports, the leaves of *C. medica* have the power to paralyse and kill earthworms (*P. posthuma*). The highest dosage (80 mg/ml) of petroleum ether extract was reported to have a 30.86 minute death and paralysis induction time [5].

### Anticancer and cytotoxic activity

When given intraperitoneally to Swiss mice bearing Ehrlich ascites carcinoma for 9 days, methanolic extract of the citrus limetta fruit peel at doses of 200 and 400 mg/kg showed a significant reduction in tumour volume, viable tumor cell count, tumor weight, and a significant improvement in haematological parameters, white blood cell count, and life span. With a concentration of 100 g/ml after 48 hours, *C. aurantifolia* oil inhibited human colon cancer cells (SW-480) by 78%. Through the stimulation of apoptosis, it may help prevent colon cancer [6]. The cancer cell line LIM1856 is cytotoxic when exposed to *C. limon* essential oil in a test tube. The aqueous extract of *C. aurantifolia* has cytoprotective properties against liver damage caused by rats exposed to aflatoxin B1.

### Antimicrobial action

Clinical isolates of *Klebsiella pneumonia*, *Klebsiella aerogenes*, *Escherichia coli*, and *Staphylococcus aureus* were all suppressed by *C. limon* fruit juice. When compared to one another, *C. aurantium* showed greater antifungal activity against *Colletotrichum capsici*

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while *C. sinensis* peel extracts had a noticeable antibacterial effect.

## CONCLUSION

Fresh and dried citrus and sweet lemon aqueous extracts showed antibacterial activity against six Gram-positive, eight Gram-negative, and one yeast strain. Since *Lentinus sajor-caju*, the fungus that causes white rot in wood, is very resistant to *C. sinensis* seed oil, it can be utilised as a preservation agent in the treatment of wood infected with the fungus. *C. limon* is said to be extremely susceptible to Propionibacterium acnes, the bacterial species that causes *Acne vulgaris*. All the bacteria (*Bacillus subtilis*, *S. aureus*, and *E. coli*) and fungus (*Candida albicans* and *Aspergillus niger*) were inhibited to varying degrees by the methanolic extract of *C. sinensis* fruit peel.

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