

Pummelo – The Giant Citrus with Giant Health Potential

*Dr. P. Pedda Nagi Reddy

Assistant Professor (Horticulture), S V Agricultural College, Tirupati-517 502

*Corresponding Author's email: p.peddannagireddy@angrau.ac.in

Pummelo (*Citrus maxima*) is the largest of the citrus fruits with a diameter ranging from 15-25 cm, round too oblong in shape. It is also called Chinese grapefruit, shaddock, and pomelo. It has several names in Indian languages also. It is called batabilebu in Bengali, papnus in Gujarati and Marathi, chakotra in Hindi, chakkota in Kannada, bombilimas in Malayalam and Tamil and pampara panasa in Telugu. The fruit is seeded to seedless with a very thick (3-4 cm) rind. The outer skin surface is green to yellow. The fruit has 16-18 segmented flesh. The color of flesh varies from white, pink to red-colored. The juice recovery percentage is around 55–60 %. The total soluble solids (TSS) content of fruit juice ranges between 8 and 12 °Brix. The fruit tastes sweet and is slightly acidic with a hint of bitterness. It is a rich source of ascorbic acid and calories. The nutritive value of pummelo fruit is shown in Table. Pummelo is a mono-embryonic species and cross-pollinated due to which it exhibits great genetic diversity for its qualitative and quantitative attributes. Pummelo fruits have been used for traditional medicine as an antipyretic, anti-inflammatory, anti-diabetes, cardiac stimulant, anti-oxidative characteristics, and used to cure insomnia, and sore throat.

1. Anticancer Property: The outer peel of pomelo is rich in flavonoids. Flavonoid plays an important role in preventing breast cancer by eliminating extra estrogen. The anti-cancer property of rind extracts was analysed using He La cell line of Chinese pummelo varieties. Kundusen et al. evaluated the anti tumor activity of pummelo leaves by administering the mice with 200 and 400 mg/kg of methanol extract of pummelo leaves for 9 days in Enrich's ascites carcinoma cell-treated mice. Results revealed that the administration of methanol extract of pummelo leaves significantly decreased tumor volume and count. Thus, the author concluded that pummelo leaves exhibited antitumor activity in a dose-dependent manner.

2. Reduce blood Pressure Levels: Pummelo is a rich source of potassium, which plays an important role in regulating blood pressure and is helpful for people with high blood pressure problems.

3. Antioxidant, Anti-hyperlipidaemia, Anti-diabetic, and Acetyl-cholinesterase Inhibitory Potential: The regular consumption of pummelo juice reduces the risk of oxidative stress by improving its antioxidant status. Oyedepo demonstrated the anti-hyperlipidemic properties of pummelo fruit extract, which helps to reduce blood cholesterol and triglycerides levels in alloxan-induced diabetic rats. Abirami et al. reported that juice samples of pummelo varieties not only showed high antioxidant potential and free radical scavenging properties but also demonstrated excellent inhibitory potential against Alzheimer's disease-related enzymes acetyl cholinesterase and butyrylcholin esterase, diabetes mellitus related enzymes α -glucosidase and α - amylase in vitro. Bhandurge et al. and Makynen et al. evaluated the anti-diabetic and hyperlipidemic effects of pummelo fruit juice on diabetic rats. Experimental rats were administered with eight different extracts of pummelo peel among them ethyl acetate, ethanolic extract, and pummelo juice showed significant anti diabetic activity and reduced total cholesterol and triglyceride level due to naringin content in pummelo juice. Thus, the author concluded that pummelo juice had anti

diabetic and hypo cholesterolemic effects. Liu et al. reported dietary fiber extracted from pomelo fruit lets promotes intestinal functions, both invitro and in vivo. The water-holding, oil-holding, and swelling capacities of the fibers retarded glucose diffusion inhibited α -amylase, and influenced cholesterol micelle formation. Fiber also helped in controlling cholesterol levels.



4. Antimicrobial Activities: Abirami *et al.* reported the invitro anti-bacterial activity of methanolic extracts of a red and white-fleshed variety of pummelo leaf, peel, and pulp extract against selected pathogenic bacterial strains *Streptomyces aureus*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Salmonella Typhi*, and *Escherichia coli*. Methanolic extracts of leaves and pulp were found to have maximum activity as compared to peel extracts against all tested bacterial strains. Antimicrobial action of pummelo peel essential oil was also tested against other pathogenic bacteria, including *Pseudomonas aeruginosa*, *Bacillus subtilis*, *Bacillus cereus*, *Salmonella enterica*, *Salmonella enteritidis*, *Streptococcus faecalis*, *Penicillium chrysogenum*, and *Micrococcus luteus*.

5. Immunity Booster, Protection against Common Cold and Flu: Pummelo provides a good amount of vitamin c, which improves immunity and provides protection against the common cold and influenza. In folk medicine, fruit juice with honey is taken to improve urinary flow, and the decoction of flowers, leaves, and pericarp of the fruit is used as a sedative for coughs and ulcers.

6. Antidepressant Property: The ethanolic leaf extract of pummelo was reported to have anti-depressant activity. The study was done with the Forced Swim Test and Tail suspension test in various animal depression models. The results suggested that antidepressant activity of pummelo extract might be mediated by inhibition of norepinephrine uptake which resulted in an increase in norepinephrine level in synapses.

7. Anti-inflammatory and Anti-nociceptive Agents: Pallavi et al. evaluated the anti-inflammatory and anti-nociceptive properties of peels of some commercially grown citrus fruits of South India viz, lime, orange (*Citrus reticulata*), sour orange (*Citrus aurantium*), pummelo (*Citrus grandis*) and citron (*Citrus medica*). Ethanolic extract was used to assess the anti-inflammatory and analgesic properties. The results revealed that all extracts treated animals have shown a significant decrease in paw edema volume at the 3rd and 4th hour of treatment. They concluded that extracts were bestowed with a high concentration of flavonoids, terpenoids, steroids, glycosides, alkaloids, carotenoids, and phenolic compounds which might be responsible for the anti-nociceptive and anti-inflammatory activities.

8. Prevents Constipation: Pummelo is a good source of dietary fiber, which plays an important role in preventing constipation. Consequently, lowers the risk of colon cancer by protecting against piles