Agri Articles
(e-Magazine for Agricultural Articles)
Volume: 05, Issue: 06 (NOV-DEC, 2025)
Available online at http://www.agriarticles.com
©Agri Articles, ISSN: 2582-9882

From Nutrition to Medicine: The Multifunctional Benefits of Guava

*Dinesh A
Department of Fruit Science, Horticulture College and Research Institute, TNAU, Coimbatore, Tamil Nadu, India
*Corresponding Author's email: a.dineshrose@gmail.com

Guava (*Psidium guajava* Linn.) is an important medicinal and nutritional plant belonging to the family Myrtaceae. It is widely valued for its traditional uses and diverse health benefits. The plant includes several economically important varieties. Guava is a climacteric fruit with a high respiration rate, which makes it highly perishable and gives it a short shelf life of 2–3 days at room temperature. The tree produces round, oval, or pear-shaped fruits that measure 5–15 cm in length and weigh 50–300 g each. Ripe guavas have a strong, sweet aroma, with peel colors ranging from green to yellow and flesh that may be white, yellow, pink, or red. The fruit also contains many small, hard seeds. Guava is often called a "super fruit" because it contains about four times more vitamin C than oranges and is rich in dietary fibre. It provides essential nutrients such as vitamins A, B, and C, carbohydrates, phenolics, flavonoids, carotenoids, and polyphenols. The leaves are also nutritionally valuable, containing high levels of flavonoids and polyphenols responsible for strong antioxidant activity (Jamieson *et al*., 2022). Guava, a "super fruit" because it contains almost four times more vitamin C than oranges and four times more fibre than pineapples. It is rich in essential nutrients, including vitamins A, B and C, carbohydrates, crude fibre, flavonoids, thiamine, niacin, pyridoxine, cyanocobalamin, phenolics, beta-cyanins, polyphenols and carotene, making it highly nutritious. The leaves are also valuable as they contain high levels of flavonoids and polyphenols, which contribute to strong antioxidant activity.

Components	Guava fruit g/100 g	Guava leaves g/100 g
Macronutrients		
Carbohydrates	14 g	38.23 g
Protein	2.6 g	22.29 g
Fat	0.5 g	5.05 g
Fiber	5.4 g	5.41 g
Vitamins		
Vitamin C	200–400 mg	
Minerals		
Iron	0.26 mg	13.50 mg
Calcium	18 mg	1660 mg
Phosphorus	28 mg	360 mg
Bioactive components		
Saponins	9.265 µg/mL	–
Alkaloids	12.982 µg/mL	–
Flavonoids	21.02 µg/mL	High
Chlorogenic Acid		149.79 mg
Rutin		123.90 mg
Quercetin		17.69 mg

Vanillic Acid		19.34 mg
Total Phenolic Compounds	94.06 mg	397.44 mg

Source: Pawar *et al.*, 2023; Thomas *et al.*, 2017

Nutrients and Phytochemicals in Guava

Guava contains a wide range of macro- and micronutrients, including vitamin C, iron, phosphorus, and calcium, with vitamin C levels significantly higher than those found in oranges. It also provides several bioactive compounds such as saponin, oleanolic acid, quercetin, catechin, epicatechin, rutin, and kaempferol, while the roots contain tannins, leucocyanidins, gallic acid, and sterols. Chemical profiling through Gas Chromatography–Mass Spectrometry of hydro-distilled P. guajava leaves collected from Northeast India identified 27 essential oil components, with α-terpinyl acetate (23.57%), trans-caryophyllene (17.65%), nerolidol (12.16%), α-cadinol (6.71%), and α-copaene (6.50%) as major constituents, and α-humulene (3.92%) and (–)-caryophyllene oxide (3.66%) as minor ones. Many of these compounds are associated with notable therapeutic activities. Terpenoid alcohol α-terpineol exhibits antioxidant and anti-inflammatory properties and may support respiratory and nervous system health. Trans-caryophyllene acts on cannabinoid receptors and demonstrates analgesic and anti-inflammatory activity, suggesting potential use in pain and anxiety management. Rutin, a well-known flavonoid, contributes to cardiovascular protection through its antioxidant and vasoprotective effects, while α-humulene shows anti-inflammatory, analgesic, and possible anticancer potential (Joshi *et al*., 2023; Ayeleso *et al.*, 2017). Triterpenes such as oleanolic acid and ursolic acid possess strong antioxidant and anti-inflammatory properties and may support liver and skin health. Flavonoids like quercetin further enhance the antioxidant profile of guava, offering anti-allergic and cardioprotective benefits. Additional compounds such as tannins, lectins, ellagic acid, and beta-sitosterol contribute antimicrobial, antioxidant, immune-modulating, and cholesterol-lowering effects, respectively. Collectively, the diverse phytochemical composition of guava highlights its significant nutritional and therapeutic value.

Traditional medical applications of guava

Guava is cultivated globally and holds an important place in traditional medicine due to its diverse nutritional and therapeutic properties. Beyond its appealing flavour and aroma, various parts of the plant including the leaves, bark and fruits, have been widely used for treating numerous ailments. Traditionally, guava preparations have been employed to support digestive health, improve skin conditions and enhance immune function. Its high dietary fibre content and low glycaemic index make it particularly beneficial for individuals seeking better blood sugar control or weight management. These attributes, along with its rich bioactive composition, highlight the enduring medicinal relevance of guava in traditional healthcare systems (Sivakumar, 2024)

Conclusion

Guava stands out as a nutritionally rich and medicinally significant plant with remarkable value in both traditional and modern healthcare systems. Its fruit and leaves contain high concentrations of vitamins, minerals, fibre, and diverse bioactive compounds—such as flavonoids, terpenoids, tannins, and phenolics—that contribute to strong antioxidant, anti-inflammatory, antimicrobial, and cardioprotective activities. The presence of key phytochemicals like α-terpinyl acetate, trans-caryophyllene, rutin, quercetin, oleanolic acid and ursolic acid further strengthens its therapeutic potential. In traditional medicine, different parts of the plant are widely used to manage digestive disorders, skin ailments, infections, and metabolic conditions, while its low glycaemic index and high fibre content support blood sugar regulation and weight management. Overall, the comprehensive nutritional profile, abundant phytochemicals, and broad-spectrum medicinal effects establish guava as a valuable functional food and a promising natural resource for future nutraceutical and pharmacological applications.

References

1. D.M. Joshi, S.S. Pathak, S. Banmare, S.S. Bhaisare Review of phytochemicals present in *Psidium guajava* plant and its mechanism of action on medicinal activities Cureus, 15 (10) (2023), Article e46364
2. L.A.T. Thomas, T. Anitha, A.B. Lasyaja, M. Suganya, P. Gayathri, S. Chithra Biochemical and mineral analysis of the undervalued leaves - *Psidium guajava L* International Journal of Advanced Science and Research, 3 (2017), pp. 16-21
3. Phebe, D. and Ong, P.T. (2010). Extending 'Kampuchea'guava shelf-life at 27oC using 1-methylcyclopropene. International Food Research Journal. 17(3):63-69.
4. S. Jamieson, C.E. Wallace, N. Das, P. Bhattacharyya, A. Bishayee Guava (*Psidium guajava L.*): A glorious plant with cancer preventive and therapeutic potential Critical Reviews in Food Science and Nutrition, 63 (2022), pp. 192-223
5. S. Pawar, V. Pawar, A. Bidwe, S. Pachankar, P. Warkad Determination of nutritional constituents of guava (*Psidium guajava*) leaves powder International Journal of Advanced Biochemistry Research, 8 (2023), pp. 434-437
6. T.B. Ayeleso, G.M. Mashudu, M. Emmanuel Oleanolic acid and its derivatives: Biological activities and therapeutic potential in chronic diseases Molecules, 22 (2017), pp. 1915-1931
7. T. Sivakumar An updated review of *Psidium guava L.* miracle plants, ethnomedicine, tea preparation and pharmacological applications International Journal of Engineering Technology and Management Sciences, 8 (6) (2024), p. 30337