

Date: 17th June-2026

**PHYSALIS PERUVIANA L.: BOTANICAL CHARACTERISTICS,
NUTRITIONAL VALUE, AND MEDICINAL IMPORTANCE**

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Recent studies have shown that *Physalis peruviana* L., highly appreciated for its unique flavor, texture, and color, is a rich source of numerous beneficial nutrients [1,2]. For instance, the fruit contains significant amounts of provitamin A, ascorbic acid (vitamin C), and B-complex vitamins, including thiamine, niacin, and vitamin B12. In addition, the fruit is rich in crude protein, phosphorus, and iron, while its calcium content is relatively low. The reported health benefits of physalis include blood purification, reduction of albumin levels in the kidneys, restoration and strengthening of the optic nerve, relief of throat infections, elimination of intestinal parasites, and treatment of prostate-related disorders [3].

The botanical name of the plant is *Physalis peruviana* Linnaeus, and it belongs to the family Solanaceae and the genus *Physalis*. More than 80 species of this genus have been identified in nature. *P. peruviana* L. is an herbaceous, semi-shrubby, erect-growing perennial plant adapted to subtropical regions. Its height typically ranges from 0.6 to 0.9 m, although under favorable conditions it may reach up to 1.8 m. The flowers are readily pollinated by insects, wind, and self-pollination. The fruit is a juicy berry with an ovate shape, measuring approximately 1.25–2.50 cm in diameter and weighing between 4 and 10 g. Each fruit contains about 100–200 small seeds.

During fruit development and ripening, the berry remains enclosed within a protective calyx (husk or fruit capsule). This structure protects the fruit from insects, birds, diseases, and adverse environmental conditions. Furthermore, the calyx serves as an important source of carbohydrates during the first 20 days of fruit growth and development [3].

The natural distribution range of this species extends from Bolivia to western Brazil. It is a perennial plant that grows primarily in seasonally dry tropical biomes. The plant is utilized in medicine, environmental applications, and as a food source. Due to its medicinal and horticultural value, *Physalis peruviana* is widely cultivated in tropical and subtropical countries. Its medicinal applications are associated with its rich biochemical composition, particularly compounds such as 15-deacetylphysalubinolide and betulin. Species of the genus *Physalis* have demonstrated antitumor properties and are used in the treatment of inflammatory conditions. *P. peruviana* is also considered a highly productive crop, capable of producing approximately 300 fruits per plant.

Based on the aforementioned characteristics, *Physalis* has been recognized as a promising plant platform for the production of recombinant proteins intended for pharmaceutical applications.

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Physalis peruviana is valued not only for its distinctive appearance and taste but also for its high nutritional quality. Every 100 g of fresh fruit contains a high proportion of water, making it a light and hydrating snack. The fruit provides approximately 53 kcal of energy and contains about 11% carbohydrates, 2% protein, and 1% fat. These characteristics make it a low-fat and nutritious food suitable for inclusion in various dietary programs [2].

The fruit is also a valuable source of essential micronutrients and vitamins. Each 100 g serving supplies approximately 18% of the recommended daily intake of niacin (vitamin B3) and 12% of vitamin C. These vitamins contribute to maintaining skin health and strengthening the immune system.

Studies on the oil extracted from different parts of the fruit, particularly the seeds, have revealed high concentrations of linoleic acid and oleic acid. These essential fatty acids are important for cardiovascular health and help maintain normal blood cholesterol levels.

The fruit oil also contains phytosterols such as β -sitosterol and campesterol, compounds that may help reduce intestinal cholesterol absorption. Furthermore, the oil contains vitamin K and β -carotene. Vitamin K supports bone health, whereas β -carotene plays a crucial role in maintaining vision. The combination of fatty acids, phytosterols, and vitamins further enhances the nutritional value of *Physalis peruviana*, making it not only a flavorful fruit but also a functional food with potential health-promoting properties [1].

In conclusion, *Physalis peruviana* is distinguished by its unique morphological characteristics and rich nutritional composition. Its adaptability to diverse ecological conditions, together with its abundance of essential nutrients and bioactive compounds, highlights its significance in many cultures worldwide not only as a commonly consumed fruit but also as an important functional food product.

FOYDALANILGAN ADABIYOTLAR:

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