

## Yellow Sapota (Egg fruit): A Nutritive Food

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### SUMMARY

*Pouteria campechiana* also known as canistel is a tropical fruit belonging to the Sapotaceae family. It is indigenous to the Central American region specifically the Bahamas, Belize, El Salvador, Guatemala and Southern Mexico. This fruit is widely distributed throughout the area including Nicaragua, Costa Rica, Panama, Puerto Rico, Jamaica and Cuba. It was previously found as far south as Brazil. In the United States canistel was introduced in Florida. Research has revealed that *Pouteria campechiana* is abundant in secondary metabolites and may possess medicinal properties for treating various diseases. Its high vitamin C content exceeding that of other dried fruits and suggests its potential as an effective scavenger of free radicals.

### INTRODUCTION

The canistel also known as eggfruit is popular in its regions of origin it remains relatively unknown in Europe and many countries in Asia. The exact introduction of the canistel to India is not known but, it likely occurred around the same time the fruit was received by the Philippines in 1924. In India, it is cultivated in Maharashtra particularly throughout the Western Ghats as well as in Kerala and certain parts of Tamil Nadu. Additionally, it is grown as a hobby fruit in a few gardens in Auroville. Despite its potential the canistel does not receive significant farming efforts and often resides in the shadow of its immensely popular sibling: the sapota. Canistel from an ecological perspective typically thrives in tropical or subtropical climates. However, it has been observed to survive in colder climates such as North Florida and certain regions of California. Remarkably, this tree can grow at altitudes as high as 1400 meters above sea level. It requires a moderate amount of precipitation and exhibits a remarkable ability to endure long, hot, dry seasons similar to those experienced in the South Asia region (Lim, 2012).

One of the notable characteristics of canistel is its high tolerance to various soil types. It can adapt and grow in soils ranging from acidic sandy soils to limestone sandy soils. Due to its adaptability canistel is cultivated and distributed widely across many countries. It is frequently sold in markets and the common names assigned to this fruit often reflect its yellowish to yellow colored flesh as well as its shape, taste and texture of the aril. In English this fruit is called yellow sapote, egg fruit and canistel. However, in Spanish-speaking Central and South American countries it is known by various names such as zapote, mamey, sapota, amarillo, fruta de huevo, custiczapoti, ti-es, and cucuma. These names reflect the fruit's buttery texture and milky taste when the pulp is ripe. The canistel is classified as a drupe and contains a single seed which is enveloped by a fleshy aril or pulp (Atapattu and Mendis, 2013). The canistel tree is characterized by its tall and upright growth habit reaching heights between 8 and 30 meters. Its trunk is slender with a diameter of up to 1 meter and features furrowed bark. Similar to other members of the Sapotaceae family the trunk of the canistel tree contains a rubbery white latex. The tree displays a spreading crown and its young branches are covered in velvet brown texture. The leaves are evergreen arranged alternately and vary in shape from oblong lanceolate to obviate with a blunt apex. They have a smooth texture and retain their green color throughout the year. The flowers of the canistel tree are bisexual emit a pleasant fragrance and can be found either solitary or in small clusters. They consist of 5 to 6 lobes, have a cream color and are adorned with silky hairs (Morton, 1987).

### Egg Fruit Characteristics

The shape of the fruit can vary ranging from round to egg-shaped, nearly round, oval, ovoid or spindle-shaped. Its length can range from 7 to 12.5 cm and its width from 5 to 7.5 cm. When the fruit is young it has a green skin with a leathery texture and contains latex. The flesh of young fruit is hard or gummy with a bitter and sour taste. As the fruit ripens or matures its skin changes to a yellowish or yellow color. The texture of the peel becomes softer and the aril (inner part of the fruit) of matured fruit is soft with few fine fibers. It has a creamy consistency and a sweet taste. According to Elsayed *et al.* (2016) the seeds inside the fruit are freestone and can range in size from 5 to 7.5 cm long. The fruit pulp accounts for approximately 77.11 per cent of the total fruit

weight. The seeds and peel make up approximately 16.5 per cent and 6.39 per cent of the total fruit weight, respectively. The seeds have the highest recorded moisture content of 50.17 per cent moisture. The pulp and peel have moisture contents of 46.1 per cent and 48.8 per cent, respectively. The immature canistel fruit displays a greenish mesocarp that releases a sticky latex when cut accompanied by a frequently bitter and sour flavor. As the fruit ripens, its mesocarp transforms from a yellowish hue to a creamy yellow color. When fully mature, the canistel fruit is commonly enjoyed fresh as a dessert boasting a fleshy pulp that possesses a buttery or creamy consistency accompanied by a sweet and milky taste. The texture of the ripe canistel pulp resembles that of a hard-boiled egg yolk with a similar quality as described in studies by De Lanerolle *et al.* (2008), Lim (2012), and Atapattu *et al.* (2014).

### Egg Fruit Nutritional Values

The phytochemical components of *P. campechiana* have been extensively studied and revealing its rich chemical composition. The fruit juice of *P. campechiana* has been found to possess antioxidant, antinitrosative and antimutagenic properties. Furthermore, the leaves of this plant contain six stilbenes and six flavonoid glycosides which have been identified as having antimutagenic activity. Additionally, the fruit of *P. campechiana* is a valuable source of plant carotenoids. The total carotenoid content in the fruit varies from 1.9 to 23.5 mg/g dry weight (DW). This makes the fruit a significant contributor to the intake of carotenoids. In a study conducted by Elsayed *et al.* (2016), it was suggested that egg fruit traditionally used in medicinal practices for conditions associated with inflammation, pain and peptic ulcers. These findings support the potential therapeutic benefits of *P. campechiana* in traditional medicine. In their study researchers discovered that the ethanolic extract obtained from canistel seeds exhibited a significant anti-inflammatory effect while, the ethanolic extract derived from the leaves demonstrated analgesic properties. Canistel a fruit rich in carbohydrates, vitamin C, vitamin B and minerals like calcium, phosphorus and iron, was found to contain neoxanthin as the predominant carotenoid. The total content of carotenoids in canistel ranged from 1.9 to 23.5 mg/g DW, as reported by De Lanerolle *et al.* in 2008.

### Harvest Season

In India, the Egg fruit season spans from June to July. During this time farmers face the task of individually picking ripe fruits from the trees since they do not ripen uniformly. According to research by Atapattu *et al.* (2014) found that a single tree can yield an estimated annual production of 136 to 250 kg of fruits. Each fruit weighs approximately 175 g.

### Post Harvest

Canistel is commonly consumed in various ways both as a dessert fruit and as an ingredient in different culinary creations. When enjoyed fresh, it serves as a delightful dessert on its own. Additionally, it is often included in fruit salads where it can be paired with condiments like salt, pepper, lime juice or even mayonnaise. The pureed form of canistel is utilized to infuse cakes and ice cream with its unique flavor and it is also employed as a delectable filling for pies. This versatile fruit finds its way into beverages as well adding a delightful twist to drinks such as fresh pressed juice, milkshakes or even eggnog. These blended concoctions are typically enhanced with the addition of milk, sugar, vanilla, nutmeg and a variety of spices.

The pulp of the canistel fruit can be dried and transformed into powder, which is then used in the preparation of pudding mixes imparting its distinctive taste (Lim, 2012). Furthermore, when the pulp ripens it can be mashed sweetened with sugar, heated and transformed into a delectable butter or spread offering a delicious alternative to traditional spreads (Morton, 1987). In addition to its use as a fruit, the latex from the canistel tree has been traditionally utilized as a material for making chewing gum in Central America (Lim, 2012). In Sri Lanka, the canistel fruit meal is employed as poultry feed to improve the growth performance and carcass parameters of broiler chickens (Atapattu *et al.* 2014). The mature canistel tree serves multiple purposes such as providing shade for coffee plants, shelter and as a potential source of timber and wood planks for constructing house frames, carts and furniture (Lim, 2012). Furthermore, the bark of the tree can be boiled to create a mixture that has been used as antipyretic medication to reduce fever in Mexico while, in Cuba, it has been employed in the treatment of skin blisters or soreness (Orwa *et al.* 2009).

### REFERENCES

Atapattu, N.S. B.M. and Mendis, A.P.S. (2013). Evaluation of canistel (*Pouteria campechiana*) fruit meal as a feed ingredient for poultry. *Iranian Journal of Applied Animal Science*, 3(1): 177-183.

- Atapattu, N.S.B.M., Sanjeevani, K.G.S. and Senaratna, D. (2014). Effects of dietary canistel (*Pouteria campechiana*) fruit meal on growth performance and carcass parameters of broiler chicken. *Tropical Agricultural Research and Extension*, **16**(2): 34-39.
- De Lanerolle, M., Priyadarshani, A.M., Sumithraarachchi, D.B. and Jansz, E.R. (2008). The carotenoids of *Pouteria campechiana* (Sinhala: ratalawulu). *Journal of the national science foundation of Sri Lanka*, **36**(1): 95-98.
- Elsayed, A.M., El-Tanbouly, N.D., Moustafa, S.F., Abdou, R.M. and El Awdan, S.A. (2016). Chemical composition and biological activities of *Pouteria campechiana* (Kunth) Baehni. *Journal of Medicinal Plants Research*, **10**(16): 209-215.
- Lim, T. K. (2012). *Edible medicinal and non-medicinal plants*. Dordrecht, The Netherlands Springer, 1: 656-687.
- Morton, J. F. (1987). *Fruits of warm climates*. JF Morton.
- Orwa, C., Mutua, A., Kindt, R., Jamnadass, R. and Simons, A. (2009). *Agroforestry Database: a tree reference and selection guide*, 4.