SAPODILLA AN INTERESTING AND DESIRABLE TROPICAL FRUIT

*By Nirmala M. Pieris**

Sapodilla *(Manilkara zapota)* (Sinhalese – Sapathilla or Rata mi) belonging to the family Sapotaceae, is a long-lived, evergreen tree. The sapodilla is believed to be native to Yucatan and possibly other nearby parts of southern Mexico, as well as northern Belize and Northeastern Guatemala. The species is found in rain forests throughout Central America where it has apparently been cultivated since ancient times. It was introduced long ago right through tropical America and the West Indies, the Bahamas, Bermuda and the southern part of the Florida mainland. Early in colonial times, it was carried to the Philippines and later was adopted everywhere in the old world tropics and is believed to have reached Ceylon in 1802. Commercial plantings prosper in Sri Lanka, the Philippines, the interior valleys of Palestine, as well as in various countries of South and Central America, including Venezuela and Guatemala.

The sapodilla tree is fairly slow-growing, upright and elegant, distinctly pyramidal when young reaching about 18m in the open but reaching almost 30m when crowded in a forest. It is strong, wind and drought resistant and rich in white, gummy latex.

Its leaves are highly ornamental, evergreen, glossy, alternate, spirally clustered at the tips of the forked twigs.

A single tree can bear up to 2000 fruits/year. The brown colored fruit looking almost like a small potato is nearly round, oblate, oval, ellipsoidal, or conical and varies from 5-10cm in width. When immature it is hard, gummy and very astringent. Though smooth-skinned it is coated with sandy brown scurf until fully ripe.

The flesh ranges in color from yellowish to light or dark-brown or sometimes reddish-brown; may be coarse and somewhat grainy or smooth; becomes soft and very juicy when ripe. The ripe fruit has an exceptionally sweet, malty flavor.

Many believe the flavor bears a striking resemblance to caramel or a pear candied with brown sugar.

Today the fruit is popular in India, Thailand and some other south-east Asian countries where it goes by the name of 'chikoo'. This name comes from the word chicle, which is the latex (or sap) bled from the tree. This sap was the original chewing gum used in the confectionary industry. The industry now uses a cheaper synthetic product. The sapodilla, therefore, is the original "chewing gum tree."

Sapodillas are available all around the season in the markets. Harvesting is usually done by plucking each fruit gently as in mango. It is often difficult to tell when a sapodilla is ready to harvest. Mature fruit appears brown and easily separates from the stem without leaking of the latex. The fruit can be scratched to make sure the skin is not green beneath the scurf.

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When purchasing fresh sapodilla only fruits with smooth intact skin and without cuts, cracks, bruises or wrinkles must be bought. Once ripe, the fruit just yields to gentle thumb pressure. Mature but unripe fruits must be kept at room temperature for 7 to 10 days to ripen. Firm, ripe sapodillas will keep well for several days in the home refrigerator.

A Healthy Fruit for a Healthy Life

Sapodilla is loaded with dietary fiber which makes it a good bulk laxative. The fiber content helps relieve constipation episodes, and also helps protect the mucous membrane of the colon from cancer causing toxins by firmly binding to them. The fruit is rich in antioxidant polyphenolic compounds such as tannins. Tannins are a complex family of naturally occurring polyphenols that neutralize acids by precipitating proteins. Tannins have shown to have potential anti-inflammatory, antiviral, anti-bacterial and anti-parasitic effects which help limit conditions like erosive gastritis, reflux-oesophagitis, enteritis and irritating bowel disorders. Some other fruits that are rich in tannins include pomegranate and grapes.

The fruit contains good amounts of antioxidant vitamins like vitamin C and vitamin A. Vitamin A is essential for vision. It is also required for maintaining healthy mucus membranes and skin. Consumption of natural fruits rich in vitamins are known to protect from lung and oral cavity cancers. So also, consumption of foods rich in vitamin C helps body develop resistance against infectious agents and scavenge harmful free radicals. Fresh ripe sapodilla is a good source of minerals such as; iron, potassium, calcium, magnesium, phosphorous, selenium, copper and zinc. These compounds are essential for optimal health as they involve in various metabolic processes in the body as cofactors for the enzymes.

The soft, easily digestible pulp of the fruit is made up with simple sugars like fructose and sucrose that when eaten replenishes energy and revitalizes the body instantly. The sapodilla thus called an energy fruit contains so much sugar that people with diabetes are advised to avoid eating it.

Sapodilla also helps promote collagen

production and will help rejuvenate the skin; so the fruit is good at slowing the aging process of the skin and can help prevent the formation of deep wrinkles. The pulped fruit is also good as a face mask.

A paste of the seeds is applied on stings and bites from venomous animals. The latex is used in the tropics as a crude filling for tooth cavities.

Many Ways of Eating Sapodilla

Generally the ripe sapodilla, un-chilled or preferably chilled, is merely cut in half and the flesh is eaten with a spoon. It is an ideal dessert fruit as the skin, which is not eaten, remains firm enough to serve as a "shell". Care must be taken not to swallow a seed, as the protruding hook can lodge in the throat.

It was long proclaimed that the fruit could not be cooked or preserved in any way. But, if you have ready access to the fruit there are numerous ways to serve it: battered and fried like it is done in Indonesia, stewed with lime juice and ginger as done in Malaysia or pulped and added to cakes, fermented to make wine, and can even replace apples in pies. A dessert sauce can be made by peeling and seeding the ripe fruit, pressing the flesh through a colander, adding orange juice and topping with whipped cream. The flesh can also be blended into an egg custard mix before baking.

Fresh fruit sections are a great addition to fruit salads. Sapodilla milk shake is a favorite drink in Asia. It is also used in ice-creams, cakes, pies, sorbets etc. Bahamians often crush the ripe fruits, strain, boil and preserve the juice as syrup. They also add mashed sapodilla pulp to pancake batter and to ordinary bread mix before baking. It is also possible to make fine jam by peeling and stewing cut-up ripe fruits in water and skimming off the green scum that rises to the surface that appears to be dissolved latex. Adding sugar to improve the texture and sour orange juice and a strip of peel to offset the increased sweetness makes a jam of a very nice color where cooking with sugar changes the brown color of the flesh to a pleasing red.

Aroma Components

The nature of the compounds responsible for the characteristic flavor of sapodilla have been reported subsequent to obtaining representative samples of the aroma volatiles by means of a modified Likens and Nickerson apparatus using 2-methyl butane as the solvent, concentration by a low-temperature-high vacuum procedure and identification by GC-MS

using both EI and CI mass spectrometry techniques.

The fruit produces only a small quantity of aroma volatiles (in total about 5 µg/kg of fresh fruit) less than that obtained for most similar fruits and this partly explains its delicate flavor. A group of "benzyl related" compounds

comprise over 45% of the essence and includes a series of 5 alkyl benzoates. Methyl benzoate and methyl salicylate were both described as having sapodilla fruit aroma on odor evaluation of separated components at an odor port at the exit of the GC column. Ethyl benzoate and propiophenone have related aroma characteristics.

Chicle and Chewing Gum

A major by-product of the sapodilla tree is the gummy latex called "chicle" that contains about 15% rubber and 38% resin. Latex is tapped only if the tree is at least 20 to 25 years old. Each tapping yields only about 1kg of gum over a period of six hours; and trees are tapped only once in three or four years. Zigzag cuts along the tree trunk stimulate the thick white juice inside to drip out, that can be collected in small bags. At the factory this chicle is boiled with corn syrup, glycerin, sugar and flavoring. It is then dried, rolled and cut into bite-size pieces. This is how chewing gum was originally made, though not everyone makes it from natural chicle these days.

The dried latex was chewed by the Mayan people and was introduced into the United States by General Antonio Lopez de

Santa Ana about 1866 while he was on Staten Island awaiting clearance to enter this country. He had a supply in his pocket for chewing and gave a piece to the son of Thomas Adams. The latter at first considered the possibility of using it to make dentures, then decided it was useful only as a masticatory. He found he could easily incorporate flavoring and thus soon launched the chicle-based chewing-gum industry. In 1930, at the peak of production, nearly 14,000,000 lbs (6,363,636 kg) of chicle were imported. Efforts have been made to extract chicle from the leaves and unripe fruit but the yield is insufficient. It has been estimated that 3,200 leaves would be needed to produce 1 lb (0.4535 kg) of gum.

The Wrigley Company was a prominent user of chicle until the 1960s, when it was replaced by a less expensive material that made chewing gum cheaper to manufacture. There are only a few companies today that still make chewing gum from natural chicle and other natural gums. Today, most chewing gums are derived from man-made materials that provide highly consistent chewing quality. But, the chicle legacy remains and "chicle" continues to be the common word for chewing gum in Spanish and, of course Chiclets gum, which is named after chicle.

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