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REVIEW ON MANILKARA ZAPOTA

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ABSTRACT:

Sapota (Manilkara zapota) is a tropical fruit tree that is native to Mexico, Central America, and parts of South America. This belongs to the family sapotaceace. The sapota fruit is a brownish, round or oval-shaped berry, about the size of a small apple, with a thin, rough, and grainy skin. The flesh is soft, creamy, and has a pleasant, musky flavour. The fruit contains many small, black, shiny seeds that are not usually eaten. It has the medicinal benefits like anti-inflammatory, helps in digestion, energy provider, source of anti-oxidants, it is good for bones, controls blood pressure. Sapota fruit is a good source of dietary fibre, vitamins A, C, and E, and minerals such as potassium, magnesium, and iron. This fruit is good for pregnant women The sapota tree is an evergreen tree that can grow up to 15-20 meters tall and has a dense, spreading crown of leaves.

INTRODUCTION:

Sapota, also known as sapodilla, it is a tropical fruit that is native to central America and Mexico but is now widely grown in many other tropical regions around the world, including India, Thailand, and the Philippines(1). The fruit is about the size of a small apple or palm and has a rough brownish skin that is thin and easy to peel. The sapota tree can grow up to 100 feet tall. Inside, the fruit has a sweet, juicy flesh that is often described as having a caramel like flavour and grainy texture similar to that of a pear. Sapota is a good source of vitamins a, c as well as a dietary fibre and minerals such as potassium, copper, iron. It is also relatively low in calories, with one fruit containing around 130 calories. The fruit is often eaten fresh, but it can be also used in a variety of culinary applications, including jams, jellies, desserts. Additionally, sapota has been used for its medicinal properties in traditional medicine, with claims that it can aid digestion, boost immunity, and even act as an aphrodisiac. The fruit is oval and around in shape and typically measures around 5-10cm in diameter(2). The sapota tree is also known for its ornamental value. Sapota is a slow growing tree. The sapota tree can be propagated through seeds or cuttings. The fruits should be stored at room temperature until it is ripe.

Overall, sapota is flavourful and versatile fruit that is enjoyed by many people around the world. Its unique texture and musky flavour make it a popular addition to various dishes, make it healthy choice for looking to add more fruit to their diet.

PLANT PROFILE OFTHE SAPOTA:

Kingdom : Plantae

Sub kingdom : Tracheobionta

Super division : spermatophyta

Division : magnoliophyta

Class : magnoliopsida

Subclass : dilleniidae

Order : ebenales

Family : sopotaceae

Genus : Manikara adans

species : Manilkara zapota[3]

There are different synonyms for sapota such as

Achras sapota L.

Achras zapota Lvar zapotilla jacq.

Achras mammosa l.

Manilkara achras [miller] fosberg

Manilkara zapotilla

Manilkara zopotilla[coville][4]

HABITAT

Sapota is mainly habitat to grow in the medium shade to full shade and minimum watering is required. They do not grow at very high temperature or low they require minimum temperature 120^0 to 360^0 celsius. They are habituated to grow in the soil which is alluvial sandy loam soil, black soil of PH 6-8. For better yield the sapota are mainly sowed between the February to March and August to October. The fertilizers commonly used are FYM, Phosphorous, Potassium and Nitrogen[5].

It is mainly cultivated in India for its fruit value and other countries it is commercially grown for the production of chickle which is a gum like substsances obtained from latex and is mainly used for preparation of chewing gums.[6]

DISTRIBUTION

The origin of the sapota takes places from the native of Mexico and other tropical countries of the America. It is grown in many states of the Karnataka, Gujarat, Maharashtra, Tamil Nadu, West Bengal and AndhraPradesh.[7]

CULTIVATION OFTHE SAPOTA

Sapota is delicious fruit introduced from tropical America and first planted near mumbai1898 and it is eaten as dessert fruit. The pulp is like sweet and melting and it is also used in many Ayurveda preparation.

Sapota is mainly cultivated in tropical fruit crop and can be grown from sea level up to 1200mheight and an annual rainfall of 125-250cm are highly suitable, minimum temperature should be 12^0-36^0 celsius.[8] Mainly sapota is grown in deep and pores soil. It can also tolerate the presence of salts in the soil and drainage is most important and these are mainly propagated by the grafting and layering. The planting and grafts is done from June to October and pits are placed at 1x1x1m at a distance of 8x8x8or9x9or10x10m are dug well before the onset of the monsoon and this pits should be filled with decomposed matter. [9]

When it comes to irrigation it can tolerate drought condition to some extent. During fruiting stage irrigation should be necessary. For healthy growth and good quality fruit manures and fertilizers should be used regularly. Fertilization will be in June and January. The average fertilizer for well grown tree must be with100kg FYM, 10kg binomial, 2.5kg,5.10.5or1kg or michem or any other micronutrient mixture. For the improvement of fruit size and fruit foliar ray, npk, Mg, and Zn are used.[10] When it comes to protection sapota plant need mainly by insect, pest and diseases. The insects and pest which effect sapota fruit such as leaf Webber, Mealybug ,Leaf minor and diseases like Leafspot, Scot mould.

After proper cultivation the harvesting should not be done in immature fruit. Mainly 5-10 years old tree gives 250-1000 fruits. After harvesting the fruit must be stored for 10-12days in 120^0 celsius. [11]

PHARMACOLOGICALACTIVITIES:

1.Anti –inflammatory effect:

Sapota acts as important anti-inflammatory agent due to the presence of tannins. It reduces the inflammation by lessen the problem of swelling and improves the problem of digestive tract.

2.Anti-oxidant activity:

Sapota prevents various bacterial infections due to prominent source of anti- oxidant. It also strengthens the intestine and boost the immunity. [12]

3.Hypoglycemic effects:

Due to the presence of some phytochemical constituents like saponin, saponin and bitter principle sapotinine in Manilkara zapota seed have anti-diabetic effect.[13]

4.Hepato protective effect:

Hepato protective activity of Manilkara zapota is based on its strong anti-oxidant activity due to the presence of carotenoids, ascorbic acid and flavonoids.

5.Prevents certain cancers:

The vitamins like A and B present in abundant amount are known to offer protection from lungs and cavity cancers. It also helps in maintaining healthy mucosa and skin.[14]

6.Anti- diarrheal activity:

Due to the presence of dietary fibres, it acts as a good bulk laxative. The fibre content of fruit gives relief from constipation and supports the colon membrane.[15]

7.Anti-lipidemic activity:

The extracts of leaves and pulp of sapota increase the amount of high-density lipids. It also decreases the weight gain.

8.Anti-microbial activity:

Sapota acts as Anti-viral, Anti-inflammatory and Anti-parasitic agent. It also acts as remedy for haemorrhoids, prevents bleeding.

9.Use of sapota during pregnancy:

Sapota helps in reducing weakness in pregnancy women and reduces symptoms such as nausea and dizziness. [16]

SIDE EFFECTS:

RAW FRUITS:

Raw sapota contains tannin which is an astringent that may cause an itchy sensation in mouth if consumed. Raw chiku consumption also cause mal absorption syndrome and also leads to allergies due to the latex present.

Consuming raw fruit may also lead to irritation and inflammation of throat which may cause breathing problems in children and if consumed under ripe chiku accidentally and can have symptoms like skin rashes, throat problems and other allergic reactions.

SAPOTA SEED:

Chiku seeds are hard and their ingestion may cause an abdominal pains and vomiting. [17]

Varieties of sapota

Sapota tastes sweet and has a soft flesh, the wider sapota family contains a variety of flavor and colors that give each variety its unique characteristics.

1.Cricket Ball:

Also known as 'Calcutta Large' bears large round fruits. The pulp is gritty and granular and moderately sweet. The maximum fruit volume was found in cricket ball: Udupi (84.07ml).the tree bears good fruit number [510],fruit yield[36.70].[18]

2. Kalipatti:

It is the leading variety in Maharashtra, Gujarat and North Karnataka. It has dark green broad and thick leaves. Fruits are oval shaped with sweet pulpy pulp. The pulp contains high TSS 22.00^{0}B, Total sugar 8.50 percent.[19]

3.Pala:

It is a popular variety in Andhra Pradesh and Tamil Nadu. The fruits are small to medium with oval or egg shape borne in clusters. The fruit pulp contains TSS 22.50^{0}B, total sugar 7.5percent. Pala is moderately susceptible to leaf spot, Pheaeophleospora indica[20]

4. Kirthabartha :

A popular variety in Andhra Pradesh. Fruits are medium sized, oval and peel is rough and thick. The fruit pulp contains TSS 21.50^0 B, total sugar 9.00 percent the cultivators is highly susceptible to leaf spot disease, pheaeophleospora indica but moderately to leaf Webber, Nephopteryx eugraphylla.[21]

5.Pilipatti:

This variety has unique small fruits found in Maharashtra and Gujarat. The fruits are oblong, elongated with soft sweet pulp. A tree produces 1386 fruits per year with fruit weight 82.4g seed number 4.7 per fruit and 25.5%TSS.[22]

6. Gutthi:

The fruits are small sized and oval in shape, with apex broadly pointed. Pulp is very sweet and fruits are borne in clusters. The tree produce 702 fruits per tree, fruits yield 38.60kg/tree TSS 22.50^{0}B,total sugar 9.75%.Guthi exhibited a total failure of softwood grafting intake with khirnee rootstock

7.Jonnavalasa:

This fruit variety from Andhra Pradesh has medium to large ovate fruits with light-coloured peel and pulp which is sweet.

8.Mamey Sapote:

These sapotes , native to Cuba and the Caribbean, are the largest fruit, resembling a smaller grapefruit – or a smoother version of a coconut – when fully matured.

9.South American Sapote:

These sapotes, also known as Chupa Chupas, are native to the Amazon jungle and thrive in deeps, damp soil.

10.Chapote:
These sapote varietals are technically persimmons, but they're more commonly called Mexican persimmons, Texas persimmons, or black persimmons.[23]

HORTICULTURE OF SAPOTA FRUIT:

1. **CO.1(1972):** It is a hybrid clone of the cross between cricket ball and oval .The fruit shape is long oval, medium sized. The flesh is granular in texture and reddish brown in colour. It comes to bearing after 4years of planting.[24]

2. **PKM.3 :** It is hybrid between guthi x cricket ball and released during 1994. The variety is adaptable to tropical plains of Tamilnadu. The variety is tolerant to leaf spot, pheaeoplleospor indica.[25]

3. **CO.3(2000):** It is a hybrid between Cricket ball and Vavilavalasa The trees are intermediate stature with compact canopy. The seeds are small and less in number of seeds per fruit varies between two and three.[26]

USEFUL PARTS OF SAPOTA PLANT :

The sapota plants have many useful medicinal values. Various parts of sapota tree including leaves, bark, and fruit have long been used in traditional medicine uses to treat conditions including fever, ulcers , arthritis.

SEEDS:

The sapota seed kernel oil is used as a base for skin ointment and its one among the emerging business in few developing countries. Seeds produce 3-12 seeds per fruit.

The sapota seed powder is used to treat dandruff and lice. The sapota seeds are washed and dried applied on the scalp.

The sapota seed oil is used for hair growth and scalp ichting.[27]

LEAVES:

The leaves of chicko plant are imbued with vital nutrients and plant compounds which has proven effects in healing mouth ulcers.

Mature green leaves are collected and boiled and reduced and filtered .After cooling, it is used for mouth gargling as well as washing wounds. This has proven effect on mouth ulcers and chronic ulcers.

STEM:

The stem bark decoction is well known for anti-microbial properties. It helps to subside itching and dandruff. To prepare decoction the bark is boiled with water and reduced, used for hair wash or as last rinse.

FRUIT:

The fruit is rich in antioxidant's.

The sapota is a high-calorie fruit offering 83 calories per 100 grams with abundant source of fibres and vitamins. It is rich in vitamin A and C and builds immunity and skin health.

These fruits are also rich source of copper, a mineral involved in forming new blood cells, brain development, immune function and the production of hemoglobin.

Sapota is rich in dietary fibers and a compound named tannins that neutralizes acid secretion in the gut. Hence it is beneficial in treating hyperacidity symptoms[28].

PHYTOCONSTITUENTS OF SAPODILLA:

The plant contains several phytochemical constituents belonging to categories such as alkaloids, carbohydrates, glycosides, tannins, triterpenes and flavonoids. It also contains amino acids, proteins, ascorbic acid , phenols, carotenoids and minerals like iron, copper, zinc, calcium, potassium. Vitamins are also present in substantial quantity which make chickoo a useful cosmetic. The concentration of constituents varies in leaves, fruits, latex seeds and bark. Major constiutents isolated from fruits of sapota are polyphenols.[29]

TRADITIONALUSES OF SAPOTA:

- The fruits and crushed seeds of sapota are used in preventing oedema due to diuretic property. They also prevent formation of kidney and bladder stones
- It is useful in pregnancy due to its high nutritional content. It reduces weakness, nausea and dizziness and prevents anameia.
- A paste of mixture of sapota flowers and fruits relieves as well as prevents the respiratory disorders.
- Sapota fruits is also a good anti-spasmodic agent.
- Sapota being rich in nutrients can be used as herbal remedy for skin infections and particularly for beauty enhancement.
- The vitamins A,C,E of the fruit Achras zapota, makes the skin healthy due to its moisturizing effect.
- The sapota seed oil helps in treating hair fall due to seborrheic dermatitis
- This gum-latex of the plant sapota is used in dental surgeries and making transmission belts.
- Besides having medicinal, nutritional and culinary uses, sapota tree has several other uses, which enhances its utility.
- The flowers of sapota used in Indonesia as an ingredient of a powder which is rubbed on woman's body after childbirth
- The decoction of this fruit is useful to treat diarrhoea.

CONCLUSION :

Sapota fruit is commonly eaten fresh but it can also be used in a variety of culinary dishes such as smoothies, ice cream and baked goods. It can also be used as a natural sweetener in place of sugar.

Sapota fruit is a good source of vitamins, minerals and fiber. It contains high levels of vitamin C and A. It is also rich in anti-oxidants and has anti-inflammatory properties.

Overall, sapota fruit and tree have several nutritional culinary and health benefits. The fruit is delicious and versatile. The tree has economic and environmental importance.

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