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A BRIEF INTRODUCTION ABOUT CARICA PAPAYA LINN.

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ABSTRACT

Papaya (*Carica papaya* Linn.) is commonly known for its food and nutritional values throughout the world. The medicinal properties of papaya fruit and other parts of the plant are also well known in traditional system of medicine. Since, each part of papaya tree possesses economic value, it is grown on commercial scale. During the last few decades considerable progress has been achieved regarding the biological activity and medicinal application of papaya and now it is considered as valuable nutraceutical fruit plant. *Carica papaya*, is an lozenge tropical fruit, often seen in orange-red, yellow-green and yellow-orange hues, with a rich orange pulp. The fruit is not just delicious and healthy, but whole plant parts, fruit, roots, bark, peel, seeds and pulp are also known to have medicinal properties. The many benefits of papaya owed due to high content of Vitamins A, B and C, proteolytic enzymes like papain and chymopapain which have antiviral, antifungal and antibacterial propertiesl. The present article reviews the pharmacological uses of *Carica papaya* and side/toxic effects. Carica papaya contains an enzyme known as papain which is present in the bark, leaves and fruit. The milky juice is extracted, dried and used as a chewing gum for digestive problems, toothpaste and meat tenderizers. It also contains many biological active compounds including chymopapain and papain which is the ingredient that aids digestive system, and again used in treatment of arthritis.

KEYWORDS: Papaya, *Carica papaya*, Medicinal plant, Nutraceutical, Fruit, Papain.

INTRODUCTION

The papaya tree belongs to a small family — Caricaceae having four genera in the world. Papaya is a powerhouse of nutrients and is available throughout the year. It is a rich source of threes powerful antioxidant vitamin C, vitamin A and vitamin E; the minerals, magnesium and potassium; the B vitamin pantothenic acid and folate and fiber. In addition to all this, it

contains a digestive enzyme-papaintha effectively treats causes of trauma, allergies and sports injuries. The fruits, leaves and latex obtained from papaya plant are used medicinally and for various other purposes. Papain, a major chemical compound extracted from fruit and stem latex is used in brewing and wine making and in the textile and tanning All the nutrients of papaya as a whole improve cardiovascular system, protect against heart diseases, heart attacks, strokes and prevent colon cancer. The fruit is an excellent source of beta carotene that prevents damage caused by free radicals that may cause some forms of cancer. It is reported that it helps in the prevention of medicine for wounds. Even you can use the pulp left after extracting the juice from papaya as poultice on the wounds. The enzymes papain and chymopapain and antioxidant nutrients found in papaya have been found helpful in lowering inflammation and healing burns. That is why people with diseases (such as asthma, rheumatoid arthritis, and osteoarthritis) that are worsened by inflammation, find relief as the severity of the condition reduces after taking all these nutrients. Papaya contributes to a healthy immune system by increasing your resistance to coughs and colds because of its vitamin A and C contents. Papaya included in your diet ensures a good supply of vitamin A and C that are highly essential for maintaining a good health. Carica papaya constituents exhibit alkaline combination, as with borax or potassium carbonate and they have showed good results in treatment of warts, corns, sinuses, eczema, cutaneous tubercles and other hardness of the skin, and also injected into indolent glandular tumors to promote their absorption. Green fruits of papaya are used to treat high blood pressure, dyspepsia, constipation, amenorrhoea, general debility, expel worms and stimulate reproductive organs.

Carica papaya

The papaya is a small, sparsely branches tree, usually with a single stem growing from 5 to 10 m (16 to 33ft) tall, with spirally arranged leaves. Confined to the top of the trunk. The lower trunk conspicuously scarred where leaves and fruit were borne. The leaves are large, 50-70 cm (20-28 in) in diameter, deeply palmately lobed, with seven lobes. All part of the plants contain latex in articulated laticifers. Papayas are dioecious. The flowers are 5- parted and highly dimorphic, the male flowers with the stamens fused to the petals. The female flowers have a superior ovary and five contorted petals loosely connected at the base.

Fig. 1: *Carica papaya* tree, flower, and ripe fruit.

1.1 Botanical classification

Domain:	Flowering plant
Kingdom:	Plantae
Sub Kingdom:	Tracheobionta
Class	Magnoliopsida
Subclass:	Dilleniidae
Super division:	Spermatophyta
Phylum	Steptophyta
Order:	Brassicales
Family:	Caricaceae
Genus:	*Carica*

Botanical Name: Carica papaya linn

Biological Sources

Botanical Name: Carica papaya

Family Name: Caricaceae

Common Name: Papaya, Paw Paw, Kates, Papaw

Part Used: Leaves, Fruits, bark, leaves.

Synonyms of *carica papaya* linn

Indian and International synonyms of *Carica papaya* Linn. and different species of *Carica papaya* Linn. Are dercribed (Table 1, 2)

Table 1: Indian synonyms of *carica papaya* linn.

Language	Region	Names
1. Hindi	Haryana, Delhi	Papaya, Papita
2. Bengali	West Bengal	Papaya, Pepe, Papita
3. Malyalam	Kerala	Omakai
4. Punjabi	Punjab	Papita
5. Marathi	Maharashtra	Papai
6. Tamil	Tamil Nadu	Pappali
7. Gujarati	Gujarat	Papaya
8. Kannada	Karnataka	Pharangi
9. Rajasthani	Rajasthan	Eerankari

Table 2: International synonym of carica papaya.

Country	Names
1. India	Papita
2. Holland	Tree melon
3. France	Papaya
4. Australia	Paw paw
5. Brazil	Mamao
6. UK	Papaya, Paw paw

Chemical composition of various parts of carica papaya plant.

Part	Constituents
1. Fruit	protein, fat, fibre, carbohydrates, minerals, calcium, phosphorus, iron, vitamin C, thiamine, riboflavin, niacin, and caroxene, amino acid, citric acids and molic acid (green fruits), volatile compounds : linalol, benzylisothiocynate, cis and trans 2, 6-dimethyl-3,6 expoxy-7 octen-2-ol. Alkaloid, α; carpaine, benzyl-β-d glucoside, 2-phenylethl-β-D-glucoside, 4-hydroxyl -phenyl-2
2. Juice	N-butyric, n-hexanoic and n-octanoic acids, lipids; myristic, palmitic, stearic, linoleic, linolenic acids-vaccenic acid and oleic acids
3. Seed	Fatty acids, crude proteins, crude fibre, papaya oil, carpaine, benzylisothiocynate, benzylglucosinolate, glucotropacolin, benzylthiourea, hentriacontane, β-sistosterol,
	caricin and an enzyme nyrosin
4. Root	Arposide and an enzyme myrosin
5. Leaves	Alkaloids carpain, pseudocarpain and dehydrocarpaine I and II, choline, carposide, vitamin C and E
6. Bark	β-sitosterol, glucose, fructose, sucrose, galactose and xylitol
7. Latex	proteolytic enzymes, papain and chemopapain, glutamine cyclotransferase, chymopapain A, B and C, peptidase A and B and lysozymes

Medicinal propeeties of *carica papaya* plant

a) **Colon cancer-** The fiber of papaya is able to bind cancer- causing toxins in the colon and keep them away from the healthy colon cells. These nutrients provide synergistic protection for colon cells from free radical damage to their DNA.

b) **Anti-Inflammatory effects-** Protein enzymes including papain and chymopapain and antioxidant nutrients found in papaya; including vitamin C, vitamins E, and beta-carotene, reduce the severity of the conditions such as asthma, osteoarthritis, and rheumatoid arthritis.

c) **Rheumatoid arthritis-** Vitamin C - rich foods, such as papaya, provide humans with protection against inflammatory polyarthritis, a form of rheumatoid arthritis involving two or more joints.

d) **Promote lung health-** If you are smoker, or if you are frequently exposed to second hand smoke. Eating vitamin A rich foods, such as papaya, help your lung healthy and save your life.

e) **Anti-sickling activity-** Current research proves that papaya is having an anti-sickling activity.

f) **Prevent prostate cancer-** Men consuming lycopene - rich fruits and vegetables such as papaya, tomatoes, apricots, pink grape fruit, watermelon, and guava were 82 % less likely to have prostate cancer compared to those consuming the least lycopene - rich foods.

Anticoagulant effect- Injection of papain extract in a dog increases prothrombin and coagulation threefold. It is also claimed that the enzyme eliminates necrotic tissues in chronic wounds, burns and ulcers. Papain is also of commercial importance in the brewery industry, in the food industry and in the textile industry.

Table 3: Some medicinal uses of papaya plant as mentioned in ancient ayurvedic literature.

Part	Medicinal uses
Latex	Anthelmintic, relieves dyspepsia, cures diarrhoea, pain of burns and topical use, bleeding haemorrhoids, stomachic, whooping cough.
Ripe fruits	Stomachic, digestive, carminative, diuretic, dysentery and chronic diarrhoea, expectorant, sedative and tonic, relieves obesity, bleeding piles, wounds of the urinary tract, ringworm and skin diseases psoriasis.
Unripe fruit	Laxative, diuretic, dried fruit reduces enlarged spleen and liver, used in snakebite to remove poison, abortifacient, anti-implantation activity and antibacterial activity.
Seeds	Carminative, emmenagogue, vermifuge, abortifacient, counter irritant, as paste in the treatment of ringworm and psoriasis, anti-fertility agents in males.
Seed juice	Bleeding piles and enlarged liver and spleen.

Root Leaves	Abortifacient, diuretic, checking irregular bleeding from the uterus, piles, anti-fungal activity. Young leaves as vegetable, jaundice (fine paste), urinary complaints & gonorrhoea (infusion), dressing wounds (fresh leaves), antibacterial activity, vermifuge, in colic, fever, beriberi, abortion (infusion), asthma (smoke).
Flowers	Jaundice, emmenagogue, febrifuge and pectoral properties.
Stem bark	Jaundice, anti-haemolytic activity, STD, sore teeth (inner bark), anti-fungal activity.

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