

Medicinal Uses of Carica Papaya

Nivaasini Sivarajah

Saveetha Dental College and Hospitals, Chennai, India

Abstract: *Carica papaya (papaya) is a herbaceous plant belonging to the family Caricaceae. The whole plant parts, fruit, roots, bark, peel, seeds and pulp are also known for its medicinal properties. The papaya has high content of Vitamins A, B and C. The proteolytic enzymes like papain and chymopapain have antiviral, antifungal and antibacterial properties. Papaya has been used as an Abortifacient, Amebicide. It can be used to treat Asthma, Corns and boils, Diarrhea and dysentery, Digestive Dyspepsia, Fever Hypertension, arthritis to stimulate Milk production. The milky juice is extracted, dried and used as a chewing gum for digestive problems, toothpaste and meat tenderizers.*

Keywords: Carica papaya, medicinal plant, therapeutic potential, dengue

1. Introduction

Carica papaya is sometimes known as paw paw which is a fast growing herbaceous plant, it belongs to the Caricaceae family (1). This plant is a dicotyledonous, polygamous and diploid species. It originated from Southern Mexico, Central America and the Northern part of South America (2). It is a rich source of three powerful antioxidants which are vitamin C, vitamin A and vitamin E. This fruit also contains a digestive enzyme which is known as papain which effectively treats sports injuries, trauma and allergies (3). Each and every part of Carica papaya is useful in some way. The leaves of papaya have been proved to contain many active components that can increase the total antioxidant power in blood and reduce the lipid peroxidation level (4). Papaya leaves and fruit complex produces several proteins and alkaloids with important pharmaceutical and industrial applications. Papain is a particularly important proteolytic enzyme that is produced in the milky latex of green unripe papaya (1). The fruit is an excellent source of beta carotene that prevents damage caused by free radicals, it also helps in prevention of diabetic heart disease. Carica papaya lowers high cholesterol levels (3). Carica papaya plant produces natural compounds in leaf bark and twig tissues which possess high anti-tumour and pesticidal properties (4). Carica papaya contains two active compounds which are chymopapain and papain which are widely useful for digestive disorders and gastrointestinal disturbance. Papain survives an acidic pH and does not denature (5). Carica papaya is a medicine for dyspepsia, hyperacidity, dysentery and constipation (1). The unripe Carica papaya fruit is used in the treatment of ulcer (4). The skin of Carica papaya can be used to heal wounds, Carica papaya exhibits alkaline combination which showed good results in treatment of warts, corns and other hard skin disease (1). The Carica papaya is a large, tree-like plant with single stem growing with spirally arranged leaves confined to the top of the trunk. The tree is usually unbranched. The flowers appear on the axils of the leaves, maturing into large fruit (1). The nutritional value of papaya helps to prevent the oxidation of cholesterol. Papaya is rich in iron and calcium. The extract of unripe papaya contains terpenoids, alkaloids, flavonoids, carbohydrates, saponins and steroids (1).

2. Parts of CARICAture Papaya

The whole Carica papaya has unique medicinal use. Every part of Carica papaya can be used to cure disease. Carica papaya is dividing into leaves, fruit, seeds, peel, roots, latex.

Leaves

Papaya leaf has a number of benefits. It can be used to cure many fatal diseases. In some parts of Asia the leaves of papaya are steamed and eaten like spinach. The leaves of Carica papaya can be used for the treatment of (4)

Dengue Fever

The juice from the leaves of Carica papaya helps to increase the count of white blood cells and platelets count, it also helps to normalize clotting and repairs the liver (3). The extract of papaya juice was given to patient with dengue fever within 24 hours the platelet count and white blood cell count raised to normal level (6). The secondary metabolite of this plant makes up a vast repository compound (6). The aqueous extract exhibits potential activity against dengue fever.

Cancer Cell Growth Inhibition

Carica papaya leaf extract has demonstrated the inhibition of cancer cell growth (3). It boosts the production of key signalling molecules called Th1-type cytokines, these cytokines help to regulate the immune system (5). Additional benefits of papaya leaves are (3):

- It can act as an acne medicine
- It increases appetite in patients with low appetite
- It helps to ease menstrual pain.
- It can help to relieve nausea

Fruits:

Papaya fruit is a rich source of nutrients such as vitamins, minerals, and dietary fiber (3). Danielone is a phytoalexin found in papaya. This compound shows high anti-fungal activity (5). The fruit can be used as:

- Laxative
- As cure for indigestion
- Helps to prevent heart attack and stroke

Fresh ripe papaya should be taken every morning to prevent indigestion, constipation and it also helps to improve appetite (3). The fruit of Carica papaya can be used to treat mouth ulcer, gum disease and toothache (4).

Seeds:

The seed of carica papaya is black. It has a very sharp and spicy taste. It can sometimes replace black pepper. Papaya seeds are very pungent and has more medicinal values compared to other parts of the tree (3) Papaya seed are antibacterial and very effective against staphylococcus infections. The seeds help to protect the kidneys from toxins and prevent kidney failure. Helps in the recovery of piles and typhoid (3). Dried papaya seeds have more nutritional value. Grinding this seed and adding it to meals will help add enzyme to diet and improve digestive problems (3).

Peel:

Peel from papaya is often used as cosmetic agents and it can be used as home remedies (1). Papaya peel can act as sunscreen and a soothing agent, it helps fight dandruff and it can be used as a muscle relaxant (3)

Roots:

The juice from the root is used to ease urine problems in some Asian countries. A decoction formed by boiling the roots of the papaya can be used to cure dyspepsia (3)

3. Medicinal Uses of Carica Papaya

a) Cancer

Papaya can inhibit the growth of cancer cells. The fiber released from the fruit binds to the cancer causing cell and keeps the cancer cell away from the health cells (3). The nutrients from the papaya provides synergistic protection for the cells which is free from radical damage (5). Men consuming lycopene rich fruits such as carica papaya, tomatoes and guava are less likely to be infected with prostate cancer compared to individuals who do not consume this food (3).

b) Anticoagulant Effect

Papain enzyme which is extracted from carica papaya can increase prothrombin coagulation. It can also eliminate wounds, burns and ulcer (3).

c) Wound Healing:

Papaya latex was identified to help in wound healing. The papaya latex was allowed to flow in the area affected with the wound. Papain and chymopapain are known to be very effective in wound healing (7). Papain and chymopapain are known to be very effective in wound healing (11)

d) Maintains a Health lung

Eating food which is rich in Vitamin A can help to keep lung in a health state (3). For example a smoker or a second hand smoker is constantly exposed to smoke and by eating food rich in vitamin A it can help save a person's life.

e) Rheumatoid Arthritis

Food rich in vitamin C provides protection to humans against inflammatory polyarthritis which is another form of rheumatoid arthritis (5)

f) Anti-Inflammatory effect

Protein enzymes such as papain and chymopapain and antioxidants are found in carica papaya. Vitamin E and

Beta carotene helps reduce severe inflammatory reaction such as osteoarthritis and asthma.

Papaya has been used to treat the following ailments in humans (10):

- Abortifacient -- Sri Lanka, and Turkey
- Amebicide -- Japan
- Asthma and respiration -- Mauritius, Mexico, and Philippines
- Bactericide -- India
- Cancer -- Australia and Mexico
- Corns and boils -- India, Malaysia, and Philippines
- Diarrhea and dysentery -- Japan and West Africa
- Digestive -- China, and Turkey
- Dyspepsia -- Mexico
- Fever -- Mexico
- Hypertension -- Malaysia
- Milk production (increase/stimulate) -- Indonesia and Malay

In Vivo Test in Mice

Albino rats of either sex were used for the study. They were placed in the same condition of temperature, light and the same food were given to all rats.

Platelet Augmentation Activity (8)

Rats were divided into two groups-Group I, Group II, Group III group IV

Group I -treated with saline for 15 days
Group II -served as toxicant group and was given cyclophosphamide for 3 days
Group III-treated with carica papaya leave extract with cyclophosphamide for 15 days
Group IV-treated with carica papaya leave extract for 15 days

Blood was withdrawn from retro-orbital plexus on the 1st, 4th, 7th and 11th day after giving the mice light anaesthesia and the platelet count was determined and on the 15th day clotting time of blood was determined by capillary method

4. Results

Platelet Count:

Carica papaya leave extract was found to significantly increase the platelet count in the rats which were induced with cyclophosphamide.

Clotting Time:

Clotting time was low in the rats which served as the toxicant group.

Disadvantages of Carica Papaya

Every plant has its own pro and cons and the same goes to Carica Papaya tree. It has disadvantages like:

- Allergies
The latex released by an unripe papaya may sometimes cause irritation to the skin when applied. The latex

contains very high concentration of uterine which can lead to miscarriages(3).

- Skin Discolouration

Too much consumption of carica papaya or food rich in colour may cause discolouration of the skin. This discolouration will attack the palm of the hand and the soles of the foot and sometimes visible area.

- Respiratory Distress

The enzyme papain may sometimes be allergic to some patients and this may cause constant symptoms like fever, asthma, wheezing and breathing difficulty.

- Gastrointestinal Irritation

Right quantity of papain causes release of digestive problems but too much of papain causes stomach upset. High Fibre content causes unrest to the digestive system. The latex from the unripe papaya fruit causes gastritis(3)

[10] Department of Animal Science – Cornell University

[11] Brocklehurst, K. and E. Salih. Fresh non-fruit latex of *Carica papaya* contains papain, multiple forms of chymopapain A and papaya proteinase

5. Conclusion

Carica Papaya is a nutraceutical plant having wide range of medicinal uses (3). The medicinal uses of this particular plant lies in various chemical constituent(5). The two important enzymes extracted from carica papaya are widely used to cure many diseases(6). The latex from carica papaya fruit can be used to cure wounds such as burns and etc.(7). The whole plant of carica papaya has its own medicinal value.

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