MEDICINAL IMPORTANCE OF PAPITA (CARICA PAPAYA): A REVIEW

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ABSTRACT

The *papita* (*Carica papaya*) is a plant used in unani medicines since ages, which is a vital fruit from the *Caricaceae* Family and is a small fast growing, soft-wooded and short-lived tree with milky sap. The skin of the fruit is green in color while it is unripe and it turns yellow to orange as the fruit ripens. It is known as papaw or pawpaw and also it is known by different names in regional languages. It is a medicinal plant that has been extensively used in traditional medicine due to their versatile benefits to cure different diseases since ancient times till date. It is a rich source of powerful antioxidants, vitamins, minerals and high content of fiber. It is evident that the compound of *C. papaya* has been reported to contain antimicrobial, antioxidant, and anti-inflammatory properties. Earlier reports have proven that *C. papaya* fruit and its active ingredients show important role in health management. Because of this comprehensive medicinal value of *Carica papaya* in this review article, we have aimed to evaluate the medicinal properties of papaya in wound healing, Hypoglycemic activity, in cardiovascular and infectious diseases, malaria and dengue fever, cancer and other various diseases prevention and treatment.

BACKGROUND

Pawpaw (*Carica papaya*) is a plant that belongs to the family Caricaceae. It is a herbaceous succulent plant with self-supporting stems. It is a large tree-like plant with a single stem growing from 5 to 10 meters tall with sparingly arranged leaves confined to the top of the trunk. The lower trunk is conspicuously scarred where the leaves and fruits are born. The tree is usually unbranched. Originally derived from the southern part of Mexico, Carica papaya is a perennial plant. Papaya contains valuable constituents in the different parts of the plants such as fruits, leaves, and seeds with different proportions. Overall, papaya and its constituents act as a miracle in diseases cure and prevention through modulation of various activities including antioxidant, anti-inflammatory, anti-tumor and hepatoprotective effect. The papaya fruit, as well as all other parts of the plant, contain a milky juice in which an active enzyme known as papain is present. Apart from its value as a remedy in dyspepsia and many other ailments, it has been utilized for the clarification of beer. The seed is used as intestinal worms expellant when chewed. The root chewed and the juice is swallowed for cough, bronchitis, and other respiratory diseases. The unripe fruit is used as a remedy for ulcer and impotence. Raw papaya dressing has reference from various Unani text books, e.g., Tajul-Mufradat(3), Khwas-ul-Advia(6), and Khazain-ul-Advia(7). Papaya dressings normalize the skin micro-

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environment, allowing healing to take place at the normal rate. Indian papaya or Carica papaya is known to have rapid de-sloughing and wound-healing properties since ancient times due to the presence of protease enzymes[8][9] plant products are a good source of antioxidant and show vital role in the diseases cure and prevention[10].

Figure 1: Morphology: Study of unripe papaya fruit collected locally[12]

Taxonomy:

Order: Parietals.
Family: Caricacea
Species: Carica papaya
Scientific Name: Carica papaya Linn.

Macroscopic View:
The fruit is a large berry, varying in size from 6cm to 15cm which becomes even more on full maturity, the fruit is elliptic- pandurate in shape with smooth green surface. It has a single hollow cavity inside in which few seeds may be present freely lined to the membraneous epicarp and inside membraneous endocarp. The unripe fruit is slightly bitter with no odour milky juices oozes out cutting the surface. The ripe fruit is sweetish in taste with slight aroma.

Microscopic View:
A cross section of the fruit shows a thin epicarp and large zone of mesocarp which alone constitutes almost the entire fruit on maturity. Numerous vascular traces are present in the mesocarp region. The epicarp appears multilayered, covered with a smooth cuticle. The 4-5 layered region consist of densely packed parenchymal which is highly pigmented and appears darker. The cells are somewhat elongated tangentially in the outer rows while the rest are polygonal in shape. This is followed by a large zone of mesocarp have vascular traces placed in between irregularly. The mesocarp consists of parenchyma appearing rounded to polygonal in shape. The vascular traces show xylary strands having thin vessels with spiral thickenings[11].

Papaya Synonyms in India

Unani / Tibbi name: Papita
English name: Papaya, Papaw tree [15]

Table 1: Papaya Synonyms in India

<table>
<thead>
<tr>
<th>Languages</th>
<th>Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urdu</td>
<td>Papita Desi [16]</td>
</tr>
<tr>
<td>Tamil</td>
<td>Pappali[19]</td>
</tr>
<tr>
<td>Northern India</td>
<td>Papit[17]</td>
</tr>
<tr>
<td>Tamil</td>
<td>Plappa</td>
</tr>
<tr>
<td>Oriya</td>
<td>Popoya</td>
</tr>
<tr>
<td>Marathi</td>
<td>Papaya</td>
</tr>
<tr>
<td>Gujarati</td>
<td>Papita</td>
</tr>
<tr>
<td>Malayalam</td>
<td>Pappaya[16]</td>
</tr>
</tbody>
</table>

Mizaj(Temperament) of the Drug
The temperament of papita (Carica papaya L.) is warm and dry in first order. (Hot 1° and Moist 1°)

Action of Drug
The pharmacological actions of papita (Carica papaya L.) are anthelmintic, anti-bacterial, anti-diarrhoeal, anti-emetic, anti-fertility, anti-inflammatory, anti-nauseant, antiphlegmatic, antidote, calorific, carminative, digestive, diuretic, Emmenagogue, resolvent, sedative and gastric tonic. Some lithotriptic activity also has been reported.

Chemical constituents
Several isomeric glucosides, lauric myristoleic, palmitoleic and arachidolic acids, pectin and free sugars

Identity, Purity and Strength:
- Foreign Matter: Not more than 2 %
- Total Ash: Not more than 8. 67 %
- Acid Insoluble Ash: Not more than 2. 72 %
- Alcohol Soluble Matter: Not more than 20. 16 %
- Water Soluble Matter: Not less than 31. 27 %
pH Value
1% solution: 6.57
10% Solution: 6.50

Locality and voucher specimen sources from which information collected:

<table>
<thead>
<tr>
<th>Locality</th>
<th>Specimen no</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ottamchathiram</td>
<td>7325-RRIUHM, CH[19]</td>
</tr>
<tr>
<td>Nellikathiri/Bylore</td>
<td>9233-RRIUHM, CH[20]</td>
</tr>
<tr>
<td>Pauri Garhwal</td>
<td>3626-singh[17]</td>
</tr>
<tr>
<td>Kheri</td>
<td>5545-singh[17]</td>
</tr>
<tr>
<td>Chckmagalore</td>
<td>1449-Gupta[21]</td>
</tr>
</tbody>
</table>

Medicinal Uses of Papaya

*Papaya* has medicinal value in the health management due to a rich source of vitamins (A,B and E and excellent source of vitamin C) carbohydrate, essential minerals (magnesium and potassium) and high contains of fiber in different parts of the plants. Different parts of papaya such as seeds, fruits, and leaves have therapeutics implications in the diseases cure since ages and also holds a key position in traditional medicines. The number of phytochemicals contains terpenoids, alkaloids, glycosides, carbohydrates, flavonoids and saponins. The leaves of papaya have shown antihyperglycemic and hypolipidemic effects. Fermented papaya have shown that this preparation is able to reduce both basal and postprandial glycemia and improves the lipid profile. The papaya therefore has the potential to prevent or perhaps reverse the pre-diabetic condition in populations that are at a higher risk. The papaya fiber is capable to bind with toxins and keep them away from the healthy cells.

Hepato-protective effect

Anti-hepatotoxic activity of ethanol, and aqueous extracts of *C. Papaya* and results confirmed that ethanol and aqueous extracts of *C. Papaya* showed remarkable hepatoprotective activity against CCl4 induced hepatotoxicity.

Anti-malaria effect

A study results have shown that ethanol leaf extracts exhibited promising inhibitory activity against the CQ-sensitive strain P. falciparum.

Dengue fever

The earlier study was conducted to evaluate the platelet increasing property of *C. Papaya* leaves juice in patients of dengue fever and which is a randomized controlled trial of 228 patients that confirmed a significant increase in platelet count and dengue hemorrhagic fever after administration of papaya leaf juice.

Wound healing activity

Extract of *C. papaya* has been reported to display antimicrobial, antioxidant, and anti-inflammatory activities. The use of papaya in traditional medicine for wound healing is believed to come from its papain content, as an active principle, which exerts an ulcer protective effect. The papaya-derived enzyme papain, when applied topically, may facilitate enzymatic wound debridement. Enzymes such as papain have the ability to dissolve dead tissue without damaging living cells and chymopapain aid in healing and development of healthy granulation tissue. Papain is a cysteine proteinase that digests necrotic tissue by liquefying eschar, thus facilitating the migration of viable cells from the wound edge into the wound cavity. Papain is also useful in reducing the bacterial burden, decreasing exudates, and increasing granulation tissue formation. The papain isolated from the latex of unripe papaya pulp is reported to be one of the earliest substances used in wound care and chronic skin ulcer therapy because of its anti-bacterial and fibrinolytic properties.

Cardiovascular effects

Papaya leaf extract used as vasodilator which reduces cardiovascular risk.

Utilization of different parts of *Carica papaya* in some traditional medicine applications

**Ripe fruit**

Ripe fruit is used for the treatment of tumors and in case of indurations in the skin and warts.

**Unripe fruit extract and paste**

It is used to treat wound and de-sloughing and extract is used as diuretic or wild laxative and as a lactation stimulant.

**Juice and flesh**

Juice and flesh are used to treat cancer, infectious diseases, corns condition of rheumatism and for alkalizing the urine.

**Roots extract**

It is used to treat syphilis, tumors of uterus, hemorrhoids, yaws and to remove urine concretions.

**Seeds paste**

Seeds paste is used as an anti-helmintic, menstruation stimulant or in case of abortion.

**Leaves extract**

Leaves extract is used as poultice in treatment of elephantoid growths, nervous pain and it is also used in the form of smoke for relief in asthma and for healing of burned wounds.

**Toxicities of papaya**

Externally the papaya latex is an irritant to skin and internally it causes severe gastritis. Some people are allergic to various...
parts of the fruit and unlikely the enzyme papain has its negative properties.\textsuperscript{[27][28]}

**Contraindications**

Papaya may cause severe allergic reactions and is therefore contraindicated in sensitive people.\textsuperscript{[27][28][29]}

**Adverse Reactions**

Papaya may cause allergic reactions in sensitive people topically papaya. Latex can be a severe irritant and vesicant. Papaya juice and papaya seeds even can cause adverse effects when taken orally. However, papaya leaves at high doses may cause gastric irritation.\textsuperscript{[27]}

**CONCLUSION**

Since ancient times, papaya plants and their products have been used in diseases treatment of various diseases all over the world. Many studies based on \textit{in vivo} and \textit{in vitro} have confirmed about their role in disease prevention through modulation of the various processes such antioxidant, anti-diabetic, anti-inflammatory, and immunomodulatory activity. \textit{Carica papaya} is well documented with ability of wound healing.

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