



Medicinal Uses of Carica Papaya

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Abstract:

Papayas have long been prized for their nutritional qualities as well as their potential for healing. The medicinal properties of papaya fruit and other parts are widely known to the many traditional medical systems, including Ayurveda.¹ Numerous traditional literatures have documented its many components for a variety of disease conditions, such as whooping cough, asthma, chicken pox, bronchitis, fever, headache, swellings, gonorrhoea, itching, jaundice, eczema, and colds. It has been established as an important nutraceutical agent over the past forty years by a number of excellent research that have confirmed its biological functions and therapeutic benefits.² The Carica papaya Linn has been the subject of scientific study. leaves has a variety of medicinal uses, such as antimicrobial, antibacterial, antipyretic, antioxidant, and anti-mollusk qualities.³ The papaya, botanically known as Carica papaya, is a tropical fruit that is lozenge-shaped and has a rich orange flesh. It is frequently seen in orange-red, yellow-green, and yellow-orange hues. Whole plant components, including the fruit, roots, bark, peel, seeds, and pulp, are known to have therapeutic qualities in addition to being tasty and healthful. Papain is an enzyme found in the fruit, bark, and leaves of the carica papaya plant. The milky fluid is removed, dried, and then used as toothpaste, meat tenderizers, and chewing gum for digestive issues.⁴ Additionally, it contains a variety of biologically active substances, including as papain and chymopapain, which support the digestive system and are also employed in treatment of arthritis.⁵

Key word: Carica Papaya, caricaceae

I. Introduction:

Medicinal herbs have long been used to cure a wide range of illnesses. There have been reports of botanicals that are commonly used to treat renal problems conventionally having a

significant diuretic effect.⁶ Medicinal plants can also be a useful aid in the treatment of hypertension. Previous research have highlighted the use of plants as diuretics agents in the treatment of hypertension and dysuria. Nowadays, commercial synthetic diuretics are used to treat hypertension, congestive heart failure (CHF), and other cardiovascular diseases.⁷

Every plant on the planet has the potential to be used as medicine. While the concentrations of these active components vary throughout plant structures, it is generally feasible to eliminate them from any plant structure.⁸ The sections selected are as follows for medicinal use: The sections known to contain the highest concentration of active chemicals are the rhizome, leaf, seed, flower, bulk, fruit, stem, root, and barks. Carica papaya Linn, a plant belonging to the Caricaceae family, is commonly referred to as Pawpaw, papaya, papayas, or Papye.^{9,10}

It is regarded as a nutritional powerhouse. It grows year-round and is the first genetically engineered fruit. Its leaves were traditionally used by our ancestors to treat a wide range of ailments, including viral infections, malaria, dengue, jaundice, and dengue fever. greater significance than mature leaves because of their more powerful contents.^{11,12}

The papaya is a large, tree-like plant with single stems that can grow up to 10 meters (16 to 33 feet) in height.¹³ Only the top of the trunk is covered in spiral-arranged leaves. The leaves have seven strongly palmate lobes and are gigantic, with diameters ranging from 50 to 70 cm. Trees are usually unbranched unless they are lopped.¹⁴ Blooms appear in the axils of the leaves and mature into large fruit. when the fruit is soft and the amber skin has turned orange. Papaya is a good treatment for all stomach and intestinal diseases.¹⁵ It is a medication used to treat constipation, dyspepsia, hyperacidity, and dysentery. Because papaya is a



strong source of proteolytic enzymes, it aids in the digestion of proteins. Even the digestive enzyme papain, which is present in papayas, is taken out, powdered dried, and used to help with digestion¹⁶ Frequent consumption of ripe fruit alleviates chronic constipation. Papaya is said to also ward against early aging. It's possible that it functions because inadequate digestion deprives our bodies of necessary nutrients.^{17,18} The fruit is thought to in order to treat stomach issues, Papaya skin is one of the greatest medicines for wounds. Even you may apply a papaya poultice to wounds using the pulp that remains after the juice is extracted.¹⁹ It has been discovered that the papaya fruit's antioxidant elements and papain and chymopapain enzymes can help reduce inflammation and heal burns. That's why eating all these nutrients causes patients with inflammatory-worsened conditions (including osteoarthritis, rheumatoid arthritis, and asthma) to feel better as their condition gets less severe. Because papaya is high in vitamin A and C, it increases your resistance to colds and coughs, which helps maintain a strong immune system. Including papaya in your diet guarantees a sufficient intake of vitamins A and C, which are vital for preserving excellent health.²⁰ In addition to showing promising results in the treatment of warts, corns, sinuses, eczema, cutaneous tubercles, and other skin hardness, carica papaya constituents exhibit an alkaline combination when combined with borax or potassium carbonate.²¹ They are also injected into indolent glandular tumors to promote their absorption. Papaya green fruits are used to stimulate reproductive organs, treat amenorrhea, dyspepsia, constipation, high blood pressure, and general debility.^{22,23}



Fig Papaya Plant

Uses for Medicinal Plant Parts

Fruit

The oblong fruit contains a melon-like core chamber that holds the seeds. Fruit is a parent that grows in clusters on the main stem more often than it does alone. The weight of a Carica papaya fruit can vary from 0.5 to 20 pounds. Green, as opposed to the yellow or reddish-orange color of mature fruit.²⁴ When the meat reaches maturity, it changes from orange-yellow to salmon, or pinkish orange. The large central seed chamber surrounds the significant edible part. Each fruit will ripen in five to nine months, depending on the cultivator and temperature. The plant will yield fruit in six to twelve months. Alkaloids, glycosides, volatile compounds, minerals, vitamins, protein, fat, and carbs.²⁵



Fig Papaya Fruit

Bloom

Bloom Papaya plants are dioecious because the male and female blooms are separated. It is also called trioecious since it also produces a bisexual flower.²⁶ The white flowers have a hint of femininity to them. It is born on the short pendulum near to core stems, with few stamens but a stigma. While bisexual flowers have the same location as their female counterparts, they are tubular in shape and have anthers that fall between the proportions of the two types of flowers; in contrast, the female flower has a pear-like shape.²⁷ The ovary has progressed. Bisexual plants are better than single flowers since they can self-pollinate. The male flower is born on a long stalk and is smaller than the female blossom.²⁸

Seeds

β -sitosterol, carpaine, benzyl isothiocyanate, benzylthiourea, crude protein, crude fibers, papaiya oil, carpaine, and the enzyme myrosin.²⁹



Root

Root caproside and myrosine enzyme Herbal remedies for kidney diseases use the therapeutic qualities of papaya root. Kidney disease is a dangerous disorder that affects both men and women.³⁰ This is so that toxins and other dangerous substances can be removed from our food and beverages by the kidneys, one of our most important organs.³¹ Papaya root's second benefit is that it can be used as medicine to treat rheumatism, a condition that is more prevalent among older people. Papaya blooms, leaves, and roots are also used in a number of other contexts.^{32,33}

Leaves

Alkaloids: choline, caproside, vitamin C, E, and carpain, pseudocarpain, and dehydrocarpain 1, 2. The leaves of *Carica papaya* plants are the most beneficial since they have a wide range of functions. Papaya leaves can be used as medicine to treat menstruation cramps and nausea in addition to skin issues like acne. It also increases appetite.^{34,35}



Fig Papaya Leaves

Bark

Bark contains xylitol, fructose, galactose, glucose, and β -sitosterol.³⁶

Latex

Papain, chemopapain, glutamine cyclotransferase, chymopapain A, B, and C, peptidase A and B, and lysosome are examples of latex proteolytic enzymes.³⁷

PROPERTIES AND APPLICATIONS OF THERAPEUTICS DENGUE

Any one of the four closely related dengue viruses can cause dengue fever, an infectious disease that is primarily transmitted by mosquitoes. Because it can occasionally induce excruciating joint and muscle agony that feels like bones are shattering, this illness was dubbed "break-bone" fever. Dengue

fever was known to medical professionals for almost 200 years. In tropical and subtropical regions of the Caribbean, Africa, South America, China, Southeast Asia, India, the Middle East, Australia, and the South and Central Pacific, dengue fever is primarily transmitted during and soon after the rainy season. Every year, between 50 and 100 million cases of dengue fever are reported worldwide. This comprises 100–200 instances in the US, the majority of which are in individuals who have recently been abroad.³⁹

PAPAYA DURING PREGNANCY:

Two of the main ingredients in papaya, chymopapain and papain, are present in the latex and have the potential to be teratogenic and abortifacient (to cause an abortion). Papain may increase the chance of uterine contraction and have negative effects on the health of mothers and their unborn children since it operates similarly to prostaglandin hormones and oxytocin (pitocin), which are known to trigger labor in the delivery mothers. Furthermore, the latex has the potential to oedematize and hemorrhage placentas, which can result in severe pregnancy complications and usually an early delivery.⁴⁰

WOUND HEALING ACTIVITY:

We hypothesized that a comparable factor might exist in both systems because of the parallels between the latex coagulation process in papaya and the human coagulation process. Should potential similarities materialize, it's plausible that certain plant metabolites that disrupt plant healing could also function to guarantee clot formation in mammals during the healing process. Papain's proliferative effect reached 15% above control, indicating that this phenomenon is likely unique to some proteolytic enzymes. Additionally, a study revealed that papain from *C. papaya* latex prevented rats' histamine-induced ulcers by preventing the release of acid. Nonspecific cysteine proteinase, which can break down a wide range of necrotic tissue substrates over a wide pH range from 3.0 to 12.0, is the main component of papain, the main ingredient in papaya latex. The action proteinases aided this component, which may also have helped to the quicker wound healing. Papain is also well-known for its ability to dissolve necrotic tissue, inhibit infection, and have antioxidant and antibacterial qualities that are connected to its ability to scavenge hydroxyl and its ability to chelate iron. Additionally, they lessen the possibility of oxidative tissue damage and exhibit



burn healing qualities due to an increase in hydroxyproline content⁴¹.

ANTIDEPRESSANTINTENT

Papaya, which has low toxicity and has been used in traditional medicine against gastrointestinal nematodes for decades, is one of many plants and plant extracts that have been traditionally used to treat helminthes infections. Papaya is rich in proteolytic enzymes that are known to break down nematode cuticles. In 1940, the fast digestion of the ascaris cuticle by worms during the production of papain from *C. papaya* latex was reported.⁴²

AMOEBICANTI-ACTIVITY

Mature papaya seeds macerated in water have demonstrated anti-amoebic properties against *Entamoeba histolytica*.⁴³

ANTIMICROBIALEFFICACIOUSNESS

It has been discovered that the seeds of the *Carica papaya* exhibit bacteriostatic activity against a variety of enteropathogens, including *Salmonella typhi*, *Escherichia coli*, *Bacillus subtilis*, *Enterobacter cloacae*, *proteas vulgaris*, *pseudomonas aeruginosa*, and *Klebsiella pneumonia*. Gram negative bacteria were more sensitive to the extract than gram positive bacteria among those tested.⁴⁴

DIURETICS

Rats' urine production dramatically increases when they are given aqueous papaya extract roots orally at a dose of 10 mg/kg, and their urine electrolyte discharge profile resembles that of hydrochlorothiazide.⁴⁵

HEPATOPROTECTIVE

The aqueous *Carica papaya* dried fruit with ethanol extract has been shown to have hepato-protective properties against rat hepatotoxicity caused by carbon tetrachloride. Significant hepatoprotection was shown by the *Carica papaya* extracts from the crude aqueous (250 mg/kg, p.o.) and ethanols (250 mg/kg, p.o.) by lowering, The concentration of SGOT, SGPT, serum-bilirubin, and alkalinephosphatase.⁴⁶

II. CONCLUSION:

Due to the nutritional qualities of its fruits, papaya plants are mostly used as food ingredients throughout the world. According to the studies mentioned above, the papaya plant includes a variety of chemical elements in its leaves, stem, fruits, and seeds, including the alkaloids carpain,

pseudocarpain, dehydrocarpaine I and II, choline, carposide, and vitamins C and E. Numerous pharmacological activities have been conducted on papaya plants, including carposide and an enzyme called myrosin, as well as benzylisothiocyanate, benzyl glucosinolate, glucotropacolin, benzylthiourea, hentriacontane, β -sitosterol, caricin, leaves-related alkaloids, flavonoids, saponins, tannins, cardiac glycoside, anthraquinones, and cardinolodes, among other substances. Because of this, in-depth on their pharmacodynamics, kinetics, appropriate standardization, and clinical trials are required to fully utilize their therapeutic potential and heal a wide range of illnesses.

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