

Carica Papaya (Linn): Overview

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Abstract- *The carica papaya (Carica papaya Linn), sometimes known as paw-paw, is a member of the Caricaceae family. Around the world, papaya is well-known for its culinary and nutritional qualities. Characteristics of Traditional medicine also makes extensive use of papaya fruit and other plant parts. In the course of Significant advancements in biological activity and medical Papaya is now regarded as a desirable fruit plant with nutraceuticals due to its applicability. Papayas are Exceptional therapeutic qualities for the treatment of various illnesses. The various components of the Carica Papaya plant parts that have been shown to have medicinal benefit include the fruit, latex, leaves, and seeds. The leaf, stem And papaya fruit are rich in latex. Unripe papaya fruit latex*

Keywords- Ocimum sanctum , β – cayophyllene , Eugenol, Urosolic Acid, Pharmacological Activity.

I. INTRODUCTION

Papaya is available year-round and is a nutritious powerhouse. It is a great source of vitamin C, vitamin A, and vitamin E, three potent antioxidants. The Minerals, potassium, magnesium, and pantothenic acid Fiber, acid, and folate. Apart from all of this, it also includes Papain, a digestive enzyme that successfully addresses reasons Of sports injuries, allergies, and trauma. Every nutrient of Papayas, in general, strengthen the heart and offer protection. In opposition to cardiac conditions, heart attacks, strokes, and to avoid Colon cancer. The fruit is a great way to get betaCarotene, which guards against harm from free radicals May be the cause of several cancer types. It is said to have been beneficial. For the avoidance of heart problems caused by diabetes Because papaya is high in fibre, it decreases elevated cholesterol levels[1]Carica papaya, often known as C. papaya L., is one of the main Tropical and subtropical regions are home to fruit harvests. On roughly 389,990 hectares, almost 6.8 million metric tons of fruit were produced worldwide in 2004 (FAO 2004). 47% of this volume was produced in South and Central America, primarily in 20% of Africa, 30% in Asia, and 20% in Brazil.

The papaya sector in Brazil is one of the biggest in the world, and it keeps growing. Demonstrate quick growth.

According to Do Carmo and Sousa Jr. (2003), there was a 151% rise in the total area under cultivation in the previous decade, a 164% increase in ten years (16 012 ha in 1990 to 40 202 ha in 2000). Growth in the amount produced during the same time span Fruits from 1990 to 2000 ranged from 642 581 to 693 779. Over the course of eleven years, the amount shipped rose from 4,071 t to 22,804 t, a 560% increase. Papaya is mostly farmed (>90%) and consumed in developing nations, but it is quickly rising in importance as a fruit globally, both when eaten raw and when processed. Fragrant male flowers in loose, densely pubescent cymes with numerous flowers at the terminals of pendulous, fistular rachis; fragrant female flowers, big, alone, or in little racemes of flowers; several kinds of enzymes Vegetable pepsin and papain are abundant.

Is a great digestive aid found in unripe fruit that helps to break down proteins in a diet in a neutral, alkaline, or acidic pH medium. It is therefore appropriate for patients with dyspepsia. Who are unable to digest gliadin, a wheat protein, can endure it in the event that raw papain is applied. Papaya possesses the asset of reducing meat tenderness. This information is being utilized by using raw papaya to roast meat until it's tender and easily absorbed [3]. As an antioxidant, fermented papaya fruit shows great promise as a nutraceutical. Even in the absence of overt antioxidant therapy, it strengthens the antioxidant defense in older people. State of inadequacy at an oral dosage of 9 g/day [4,5].

II. CLASSIFICATION, ANATOMICAL STRUCTURE, AND LINKAGE

2.1 Botanical Classification

Domain : Flowering Plant Kingdom : Plantae
subkingdom Division : Tracheobionta
Class : Magnoliopsidae
Sub class : Dilleniidae
Superdivision : Spermatophyta
Phyllum : Steptophyta
Order : Brassicales
Family : Caricaceae
Genus : Carica
Botanical Name : Carica papaya Linn [2]

2.2 *Carica papaya* Linn. Synonyms:

synonyms for *Carica papaya* Linn. In India and abroad, as well as various species of the plant. Are summarized in Tables 1, 2, and 3.

Table 1: *Carica papaya* Linn's Indian Synonyms^[7]

NAMES	LANGUAGE	REGIONS
1 Papaya,papita	Hindi	Haryana,Delhi
2papaya,pepe,papita	Bengali	West Bengal
3 Omakai	Malayalam	Kerala
4 papita	Punjabi	Punjab
5 papai	Marathi	Maharashtra
6 pappali	Tamil	Tamil Nadu
7 papaya	Gujarati	Gujarat
8 pharangi	Kannada	Karnataka
9 Eerankari	Rajasthani	Rajasthan

Table 2: *Carica papaya* Linn's international synonym^[7]

Name	Country
1 papita	India
2Tree melon	Holland
3Papaya	France
4 Mamao	India
5 paw	Paw in Australia
6 Paw,Papaya	United Kingdom

Table 3: Varieties of *Carica papaya* Linn^[7]

1. <i>Carica candamarcensis</i>	<i>Carica monoica</i>
2. <i>Carica Mexicana</i>	<i>Carica weberbaueri</i>
3. <i>Carica caudate</i>	<i>Carica omnilingua</i>
4. <i>Carica cauliflora</i>	<i>Carica palandensis</i>
5. <i>Carica chilensis</i>	<i>Carica parviflora</i>
6. <i>Carica horovitziana</i>	<i>Carica spruce</i>
7. <i>Carica cundinamarcensis</i>	<i>Carica pubescens</i>
8. <i>Carica dodecaphylla</i>	<i>Carica pulchra</i>
9. <i>Carica glandulosa</i>	<i>Carica quercifolia</i>
10. <i>Carica heterophylla</i>	<i>Carica spinosa</i>

11. <i>Carica candicans</i>	<i>Carica nana</i>
12. <i>carica longiflora</i>	<i>Carica stipulate</i>
13. <i>Carica crassipetala</i>	<i>Carica pentagona</i>
14. <i>Carica goudotiana</i>	<i>Carica sphaerocarpa</i>

Overview of profile the plant:



Fig. 1: *Carica papaya* plant



Fig. 2: *Carica papaya* fruit



Fig. 3: *Carica papaya* root



Fig. 4: Carica papaya flower

III. CHEMICAL CONSTITUENTS OF CARICA PAPAYA LINN

One of the valuable plants used in medicine for a variety of purposes is *Carica papaya* Linn. The *Carica papaya*'s leaves, fruit, and seeds are used in traditional medicine. The biochemical components of papaya leaves from *Carica* are described in this work. The chemical makeup of the different parts of the *Carica papaya* plant is explained in Table 5.

Table: 4 chemical composition of various parts of carica papaya^[8,9,10]

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 epoxy-7 octen-2-ol. Alkaloid, a; carpaine, benzyl- β -d glucoside, 2-phenylethl- β -D-glucoside, 4-hydroxyl-phenyl-2 ethyl-B-D glucoside and four isomeric malonated benzyl- β -D glucosides
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	Arposide and an enzyme myrosin

6. bark	B-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

3. Parts and medicinal uses of *C. papaya*

papaya is an enzyme powerhouse. Enzymes have been found in different parts of the plant: unripe fruit (papain, chymopapain), fruits (B carotene, carotenoids, crytoxanthin, monoterpenoids, linalool), roots (carposides), seeds (papaya oil, glucosinolates, benzyl isothiocynate), leaves (Zn, Mn, Fe, K, minerals), shoots (flavanoids, kaemferol, myricetin, minerals, Ca, Mg, Fe), and leaves (vitamin C and E, alkaloids, carpaine). The plant's numerous medicinal qualities, which are listed in Table 1, are among the traditional claims.

Table: 5 Medicinal uses of *C. papaya* plant mentioned in traditional ayurvedic literature^[25,26]

parts	Medicinal uses
Ripe fruits	Carminative, diuretic, chronic diarrhea, dysentery, wounds of urinary tracts, stomachic, ringworm, sedative and tonic, bleeding piles, expectorant
Unripe fruit	Diuretic, antibectrial activity, laxative, used in snakebite to remove poison, abortifacient
Seeds	Carminative, anti-fertility agents in males, counter irritant, as a paste in the treatment of ringworm and psoriasis.
Roots	Anti-fungal activity, diuretic, checking irregular bleeding from uterus, piles
Leaves	Asthma, beriberi, fever, abortion, dreesing wounds (fresh leaves), antibacterial activity, jaundice, gonorrhoea, urinary complaints, vermifuge.
Flower	Flower Febrifuge, jaundice, pectoral properties.
Stem bark	STD, anti-fungal activity, jaundice, anti-haemolytic activity, sore teeth.

IV. PHARMACOLOGICAL PROPERTIES OF *C. PAPAYA*

Numerous medical benefits of *C. papaya* have been demonstrated, including anti-inflammatory, anti-hypertensive,

wound-healing, hepatoprotective, anti-inflammatory, antimicrobial, antifungal, anti-fertility, histaminergic, diuretic, antiamebic, anti-tumor, anthelmintic, action on smooth muscles, antimalarial, hypoglycemic, immunomodulatory, anti-ulcer, and anti-sickling properties

a. Antimicrobial activity

The agar diffusion method was used to determine the antimicrobial activity of an aqueous extract of *C. papaya* leaves and roots at various concentrations (25, 50, 100, and 200 mg/mL) against some human pathogenic bacteria [11].

b. Antifungal activity

Candida albicans growth is inhibited by the combined action of fluconazole and *C. papaya* latex. Partial cell wall degradation is the outcome of this synergistic effect. The minimum protein concentration required to produce a complete inhibition was found to be approximately 138 mg/mL [12]. Latex proteins are thought to be the cause of the antifungal action.

c. Anti-inflammatory activity

Rats were given an ethanolic extract of *C. papaya* leaves using models of formaldehyde-induced arthritis, cotton pallet granuloma, and paw oedema caused by carrageenan. The extract's ulcerogenic potential was also looked into. The end outcome demonstrated that the extract significantly reduced the paw oedema in the subjects at doses of 25–250 mg/kg p.o. carrageenan examination. The extract caused a small amount of mucosal irritation; higher dosages can cause irritation [13].

d. Diuretic activity

Rats were given an ethanolic extract of *C. papaya* leaves using models of formaldehyde-induced arthritis, cotton pallet granuloma, and paw oedema caused by carrageenan. The extract's ulcerogenic potential was also looked into. The end outcome demonstrated that the extract significantly reduced the paw oedema in the subjects at doses of 25–250 mg/kg p.o. carrageenan examination. The extract caused a small amount of mucosal irritation; higher dosages can cause irritation [13].

e. Anti-fertility activity

When *C. papaya* bark extract (5–10 mL/kg.d., p.o. for 4 weeks) was applied to rats' seminiferous tubules, it completely destroyed fertility, which was attributed to a

decrease in sperm motility and morphological changes. Hence, the bark demonstrated the safety and potential efficacy of using it as an animal form of male contraception [14].

f. Anti-ulcer activity

Rats were given an aqueous seed extract of *C. papaya* at doses of 50 mg/kg and 100 mg/kg p.o. to prevent acute gastric damage and blood oxidative stress caused by alcohol. When rats were administered 100 mg/kg of the extract, their stomach acidity was considerably decreased [15].

g. Immuno-modulatory activity

Complement-mediated hemolytic assays and lymphocyte proliferation assays were used in vitro to investigate the chemical components of the *C. papaya* seed extract and its bioactive fraction [16].

h. Anti-malarial activity

Papaya fruit rind is extracted using petroleum ether, with concentrations ranging from 0.05 to 1,000 µg/mL. Significant anti-malarial activity was shown by the extract [17]

i. Hypoglycemic activity

Blood sugar levels were significantly lowered by the ethanolic leaf extract of *C. papaya* at a dose of 5.0 mg/kg; at a higher dose of 10 mg/kg, there were no discernible effects. Glimpiride's hypoglycemic activity was delayed by the extract, and metformin's hypoglycemic effect was enhanced. The variables interacted differently for each combination of drug and extract. [18].

j. Anthelmintic activity

The elixir made from dried papaya seeds and honey has demonstrated a noteworthy impact on intestinal parasites in humans while posing no noteworthy adverse effects. Seeds contain the primary anthelmintic, benzoylisothiocynate [21–24]. In mice with an experimental infection, papaya latex was found to be effective against *Heligmosomoides polygyrus*, suggesting that it may have a role as an anthelmintic against strong intestinal nematodes in mammals [20]. At a dose of 8 g/kg body weight, it was found to be 100% effective in treating *Ascaris suum* infections in pigs naturally. It also possesses anthelmintic activity [19].

V. CONCLUSION

In summary Every part of the plant has therapeutic value. The plant (*C. papaya*) is considered a nutraceutical plant because of the different vitamins and enzymes it contains. The pharmacological properties of papaya are diverse. According to custom, papaya has potent medicinal properties. Considerable research has been conducted on biological activities. The uses of chemical constituents and all pharmacological activities are covered in this review.

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