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Mehul B Vyas
Sardar Patel College of Pharmacy, Vidyanagar Vadtal Road, Bakrol, Gujarat, India.

Samir K Shah
Sardar Patel College of Pharmacy, Vidyanagar Vadtal Road, Bakrol, Gujarat, India.

Correspondence
Mehul B Vyas
Sardar Patel College of Pharmacy, Vidyanagar Vadtal Road, Bakrol, Gujarat, India.

Review on nutritional and medicinal values of "*Carica papaya*"

Mehul B Vyas and Samir K Shah

Abstract
Plants and plant ingredients are common and of major importance in the fields of pharmacy, food and cosmetic. Since the ancient time, plants including it parts such as leaves, fruits, seeds, flowers, stems, barks, and roots are very well known among the cosmetic and pharmaceutical industries. In cosmetic industries, the application of plants and plant extracts are widely used and various of purpose such as moisturizing, whitening, tanning, color cosmetic, sunscreens, radical-scavenging, anti-oxidant, immune stimulant, washing, preservatives, ands thickeners. The spectrum of used of plants or parts of plants is broad and ranges for different types of plants. Instead of known the plants benefits, there are also a certain limitations can occur when to use the plants or plant material such as availability can be restricted through seasons, limited stock, protection of the plant, problems in cultivation and bad harvest. Besides that the inconstant of quality through seasonal changes, different cultivation methods, geographical differences, delivery sources, clone types, pollution and also physical state. These facts complicate the use of certain plants in a cosmetic application.

Keywords: Nutritional and medicinal, *Carica papaya*

1. Introduction
Papaya is a fruit of the papaya tree or also known as *Carica papaya*, native of Central America. The fruit ripens from 4 to 6 months depend on the climate where it is grown (Salunkhe and Kadam, 1995) [1]. The other name of papaya is Papaw or Paw Paw where it is belongs to the group of Caricaceae (Oleyede, 2005) [2]. The plant can be monoecious, dioecious or hermaphroditic (Purseglove, 1968, Janick, 1980) [3]. Papaw fruit is a berry, developing from syncarpous superior ovary with parietal placentation (Kochhar, 2986, Rice *et al*., 1987) [5]. Mostly, plantation of papaya is used for its fruits, and it is very familiar among people because they used them as their breakfast and also as an ingredient in jellies, preserves, or cooked in various ways. The juice makes a popular beverage, young leaves, shoots and fruits cooked as vegetable (Oleyede, 2005) [2].
Plant extracts have pronounced bactericidal activity against Staphylococcus aureus, Bacillus cereus, Esherichia coli, Pseudomonas aeruginosa and Shigella flax neri (Oleyede, 2005) [2]. Proximate analysis, mineral composition and phytochemical analysis were carried out on dried sample of unripe papaya to determine the unripe papaya properties (Oleyede, 2005) [2].

Biological Sources
Botanical Name: *Carica papaya*
Family Name: Caricaceae
Common Name: Papaya, Paw Paw, Kates, Papaw
Part Used: Leaves, Fruits, bark, leaves

Constituents and Effects

In addition to papain -- also called vegetable pepsin -- papaya contains protease inhibitors, alkaloids, beneficial flavonoids, saponins, tannins and anthraquinones. Papaya is high in vitamin C and is a good source of folate, carotene and magnesium. It is also high in dietary fiber, which can help prevent digestive diseases.Drugs.com credits papaya with anti-inflammatory and antioxidant properties, as well as wound-healing abilities. Papaya also was shown to lower serum cholesterol and triglycerides -- or fats in the blood -- in animal studies.

Nutritional Value

The papaya, papaw, or pawpaw is the fruit of the plant *Carica papaya*, the only species in the genus Carica of the plant family Caricaceae. It is native to the tropics of the Americas. The papaya is a large, tree-like plant, with a single stem growing from 5 to 10 m (16 to 33 ft) tall, with spirally arranged leaves confined to the top of the trunk. The leaves are large, 50–70 cm in diameter, deeply palmately lobed, with seven lobes. The tree is usually unbranched, unless lopped. The flowers appear on the axils of the leaves, maturing into large fruit. The fruit is ripe when it feels soft and its skin has attained amber to orange hue. These nutritional values of papaya help to prevent the oxidation of cholesterol. Papaya is rich in iron and calcium; a good source of vitamins A, B and G and an excellent source of vitamin C (ascorbic acid). The extracts of unripe *C. papaya* contain terpenoids, alkaloids, flavonoids, carbohydrates, glycosides, saponins, and steroids.

Table 1: raw Nutritional value of papaya per 100 g

Energy	163KJ
Sodium	3 mg
Potassium	257
Phosphorus	5
Magnesium	10
Iron	0.10
Calcium	24
Vitamin C	61.8
Folate (vit. B9)	38
Vitamin B6	0.1
Niacin (vit. B3)	0.338
Riboflavin (vit. B2)	0.05
Thiamine (vit. B1) 0.04 mg	0.04
Vitamin A	328
Protein	0.61
Fat	0.14
Dietary fibre	1.8
Sugars	5.9
Carbohydrates	9.81

Medicinal Values

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 poly arthritis, 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 grapefruit, watermelon, and guava were 82%less likely to have prostate cancer compared to those consuming the least lycopene-rich foods.

G. Anticoagulant Effect

Injection of papian extract in a dog increases pro thrombin 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.

6. Allergies and Side Effects

Papaya is frequently used as a hair conditioner, but should be used in small amounts. Papaya releases a latex fluid when not quite ripe, which can cause irritation and provoke allergic reaction in some people. The latex concentration of unripe papayas is speculated to cause uterine contractions, which may lead to a miscarriage. Papaya seed extract large doses have a contraceptive effect on rat sand monkeys, but in small doses have no effect on the unborn animals. Excessive consumption of papaya can cause carotenemia, the yellowing of soles and palms, which is otherwise harmless. However, a very large dose would need to be consumed; papaya contains about 6% of the level of beta carotene found in carrots (the most common cause of carotenemia)

a. Toxicity

Externally the papaya latex is an irritant to the skin and internally it causes severe gastritis. Some people are allergic to various parts of the fruit and even the enzyme papain has its negative properties.

b. Skin Discoloration

Eating too much of a yellow, green or orange colored food that contains beta carotene can cause a benign form of skin discoloration called carotenemia. The palms of the hands and soles of the feet are the most visible areas of the body effected by carotenemia. Cutting back on your papaya consumption will resolve the discoloration of the skin.

c. Free Radical Scavenging Activity

Papaya has many phenolic groups which may scavenge free radicals. Aqueous extract of papaya leaves shows anti-oxidant activity

d. Respiratory Distress

Papain is also a potential allergen, according to Purdue University, people who eat too much papaya and ingest high levels of papain may develop symptoms consistent with hay fever or asthma, including wheezing, breathing difficulties and nasal congestion.

e. Gastrointestinal Symptoms

Ironically, the same papain that calms your stomach can cause an upset stomach when taken in large amounts. The high fiber content of papaya can also contribute to unrest of the digestive system. The latex of the fruit's skin can also cause irritation of the stomach.

7. Preliminary Research

Papaya seed extract may have in toxicity-induced kidney failure. Evidently a kidney-transplant patient in London was cured of a post-operative infection by placing strips of papaya on the wound for 48 hours. Women in India, Bangladesh, Pakistan, Sri Lanka, and other countries have long used green papaya as an herbal medicine for contraception and abortion Enslaved women in the West Indies were noted for consuming papaya to prevent pregnancies and thus preventing their children from being born into slavery.

Is Papaya in Pregnancy Safe or Not?

There are so many old wives tales and information flooding the media that people should or should not have certain foods to eat during pregnancy. But there is one specific food which I get asked about so regularly that I need to write about it. That's Papaya, is it Safe? There have been many research projects into the effects of foods on pregnant women and papaya is no exception. Now the problem with Papaya is that in an unripe state the Papaya contains high concentrations of Latex, this latex concentration reduces upon ripening and once completely ripe has almost no latex left. The Papaya latex's main constituents are papain and chymopapain which have teratogenic (abnormalities of physiological development) and abortifacient (Can induce an abortion) effects. It does this by increasing the chances of uterine contractions as the papain acts like prostaglandin and oxytocin which are known to put a mother’s body into labour and hence an adverse effect on the babies and mothers health. The Latex can also cause marked oedema and hemorrhagic placentas which are bleeding and hemorrhaging from the edge of the placenta, this can result in severe complications in pregnancy and normally an early delivery.

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