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## RESEARCH ARTICLE

### ETHNOMEDICINAL PROPERTIES OF *CARICA PAPAYA* SEED EXTRACT –A REVIEW ON LESS INVESTIGATED PART

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#### ABSTRACT

A herbaceous plant, *Carica papaya* belonging to caricaceae family is well known for its nutraceutical properties. It is grown all the tropical regions .Papaya fruit is consumed by the humans in daily diet due to its medicinal and therapeutic properties .Each and every part of the plant has been depicted with some unique biochemical properties including leaves ,peels ,fruits, bark and even roots. The aim of the present review article is to enlist the miraculous properties of the seeds present inside the fruit The paper provides detailed information on the different properties of Carica papaya seed extract The seed powder extract have been found to be rich in proteins ,minerals ,essential oils along with various phytoconstituents which may be responsible for many ethno medicinal properties .

## INTRODUCTION

Papaya an extensively explored plant possess a number of medicinal properties .The father of medicine Hippocrates advocated the use of medicinal plants to be used to prevent and cure diseases (1)In order to strengthen research on the medicinal plants and to ensure the efficacy of the products of the respective medicinal plants a number of national policies have been passed by the WHO(2).Papaya reported to be the powerhouse of the nutrients is available throughout the year and approximately in all the seasons .The herbaceous plant has fruits which grow in bunches. The plant height can go maximum up to 10 meters (.3).India leads the world in papaya production with an annual turnover of about 3 million tones .On a global rate ,the annual output of about 3.2 million tonnes is added by countries including Brazil, Nigeria, Mexico, Indonesia etc. (4) Papaya fruit is consumed both in raw and ripe condition (5).The fruit contains a good number of small pepper like seeds that also possess therapeutic properties (6).The seeds have been found to show ameliorative efficacy to treat diabetes mellitus, hepatic ,and neural complications. Besides problems related to fertility, hyperglycemia, amoebic dysentery t have also been reported to get rectified and ameliorated by the seeds (7,8,9). The fruit seeds have been reported to contain various chemical constituents like flavonoids, polysterols, caretonoids, alkaloids, cyanogenic compounds (10,11,12,13,14,15, 16). Seeds have been reported to be responsible for the 20%mass of the total fruit .These seeds are also rich in unsaturated lipids and thus can be used as alternative source of essential oils (17,18,).

## MATERIALS AND METHODS

Various articles were studied to evaluate the various important properties of *Carica papaya* seeds .Online databases were studied to collect the properties of seeds of papaya fruit.

#### Chemical composition of *Carica papaya* seeds

Sl no.	Parameter	Properties(expressed in mg/100g)
1	Moisture content	2.40-9.82
2	Ash	6.93-10.5
3	Carbohydrate	8.42-27.61
4	Protein	24.32-32.8
5	Lipid	20.98-30.3
6	Dietary fibre	17.1-23.6
7	Beta Carotene	.88
8	Ascorbic acid	0.13-0.15
9	Sodium	.39
10	Potassium	744-1634.5
11	Iron	5.24-5.9
12	Calcium	7.26-8434
13	Zinc	5.00-6.18
14	phosphorus	567
15	copper	0.51
		(19,20,21,22,23,24)



**Fatty acid profile of *Carica papaya* seed oil:** The chemical composition of *Carica papaya* seeds have nutraceutical properties and medicinal values making them important to be used in human diet. The seeds supposed to be the waste materials and are not directly consumed by the humans or any other organisms directly as food also consists of about 16-32% protein (25,26 ,27,28,29) lipid (21-30%) (30,31,32,) and carbohydrates. Papaya seeds have been reported to have a strong spicy flavor along with the oils with a strong aroma .Seeds have a composition of essential oils (21-30%) enriched with various phytochemicals .Other essential oils includes oleic acid (71-79%) which is supposed to be anti-inflammatory as well as antitumor genetic agent (5,21,27,29,30,31).Palmitic acid, aracdic acid ,linoleic acid, stearic acid are also present in the seeds. Various therapeutic properties of *Carica papaya* seeds:

**Antilipidemic:** Papaya seed extract have been reported to consists of a notable amount of dietary fibers having many health benefits. The seeds have been reported to remove toxins out of digestive system and also to show a decrease in the level of high cholesterol (33,34).

**Anti-Cancerous:** The various phytochemical constituents present in the papaya seeds including phenol, isothiocynate ,phenols, phytosterols, carotenoids are supposed to offer anti proliferation of cancerous cells (15)

**Antioxidative properties:** Phenolic components, isothiocynate, terpenes, anthraquinones are supposed to scavenge reactive molecules thus protecting the cellular environment against oxidative stress (14,15,36,39)

**Gastroprotective properties:** Phenolic seed extract of papaya seed extract showed an ameliorative effect on indomethacin induced gastric ulcer on rat model by 84% a Gastric mucosal cells were also supposed to be saved against ethanolic adverse actions.

**Anti-tumoregenic effect:** 2.1 mg/ml of *Carica papaya* seed extract showed cytoprotective effects against hepatocellular carcinogenesis (32).Similarly ant proliferative activity of the same was reported in breast cancer also (35)

**Ant parasitic activities:** Studies of PSE (papaya seed extract) have shown the efficacy of seeds to have ant parasitic activity against *A.lumbricoides* ,*C.elegans* and *C. caninum* (38,39)

**Contraceptive activities:** Studies on PSE suggested that seed extract can prove to be a good male contraceptive .These extracts have been reported to cause reversible infertility by reducing sperm motility, sperm viability (38,39). The other effects included lowering in sperm counts, inhibited estrogen secretion (40,41.).

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