

The Surprising Health Benefits of Papaya Seed

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Abstract

Nutritionists are looking for alternative protein sources and functional feedstuffs that can replace the role of antibiotic growth promoters in chicken production as a result of the continual increase in the price of protein feed components and the removal of antibiotics from diets. These seeds from ripe papayas can be used as alternative protein feed element for poultry due to its crude protein content of 24–30%, in vitro protein digestibility of 80%, and proportion of essential amino acids of 47%. Additionally, papaya seed may have the ability to function as a feed ingredient that can take the place of antibiotic growth promoters for chicken due to its growth-promoting effects, antibacterial and antiparasitic properties, immune modulatory properties, and antioxidative properties. A thorough investigation is required to clarify the functions of papaya seed in poultry. This review offers the most recent information on the nutritional value of papaya seed, its potential to replace traditional protein-rich ingredients, its growth-promoting properties, its antimicrobial and antiparasitic properties, its antioxidative properties, and its immunomodulatory effects on poultry.

➤ Introduction

The papaya belongs to the four-genus tiny family Caricaceae. Four species of the genus Caricaceae papaya L are found in India, with *Carica papaya* L. being the most widely cultivated and well-known (Jean et al., 2011) [1]. Its common name is papaya. *Capaya*, *Lapaya*, *Papyas*, *Papye*, *Tapayas*, *Fanmuguapapita*, *Pawpaw* or *Papau*, *Kapaya*, *Lapaya*, *Papayabaum*, *Arand*, *Kharpuja*, and *Papaya* (Bhattacharjee, 2001) [2]. The classificational Kingdom, (Plantae), Order (Brassicales), Family (Caricaceae), and Genus are included in the categorization. Species and (*Carica*) (*papaya*). Most likely, Costa Rica and southern Mexico are where papaya originated. Costa Rica was afterwards made popular in Australia, Hawaii, the Philippines, Sri Lanka, South Africa, and All tropical and subtropical regions, including India. It is being grown both in home gardens and commercially (Marotta et al., 2006) [3]. Researchers at the University of Florida did a study that Nam Japanese researchers Dang and colleagues have documented papaya's potent anticancer capabilities and its effect on many lab-grown tumors that Fatty acids, crude protein, crude fibre, carpain, caricin, glucotropaeolin, benzylglucosinolates, benzylisothiocyanate, benzyl thiourea, hentriacontane, β -sitostrol, and an enzyme called myrosin are all present in papaya seeds. The pulp and seeds of papaya *Carica* contain benzyl glucosinolate, which myrosinase can hydrolyze to create benzylisothiocyanate. Seed extracts have strong antibacterial properties. The chemical benzyl isothiocyanate, which contains sulphur and has been found to be a powerful pesticide and germicide, is abundant in the seeds of unripe fruits. These elements are crucial for a plant's natural defense. (El Moussaoui et al., 2001) [4]. Mechanisms Papaya seed is used medicinally as a carminative, psoriasis, male fertility inhibitor, a pain reliever, a paste for the treatment of ringworm

and psoriasis, hepatic cirrhosis, emmenagogue, vermifuge, and abortifacient., For bleeding piles, an enlarged liver, and pectoral characteristics, seed juice is employed. Uses for seed paste include anthelmintics, menstrual cycle stimulation, and abortion, 2004. According to several research, Carica papaya seeds have proven to be an efficient anthelmintic against nematodes found in animals (Chota A., 2010) [5]. Chinoy et al., (2006) [6] Mandarin et al. The antifertility, anti-implantation, and abortifacient effects of seeds from a papaya, extracted. The effects of C. papaya seeds on males have been established. potential treatments for infertility (Lohiya et al., 2005) [7] Papaw seeds are utilized to make an The Hausa name for a fermented dish, "daddawa," is an ancient Nigerian cuisine condiment (Dakare, 2004) (Dakare, 2004) [8]. According to Abdulazeez et al. (2009) [9] unfermented extract had the desired effects on rat litters, whereas fermented seeds had no such effects (Abdulazeez, 2008) [10] Papaya seeds' anthelmintic properties have been primarily attributable to the alkaloid carpaine and the carpasemine, later discovered as benzyl thiourea. Carpaine has a powerful depressive effect on health and an intensely bitter flavour. It can be found in the papaya leaf as well as the fruit and seeds. Benzyl isothiocyanate (BITC), the primary bioactive component in C. Kermanshahii anti-fertility effect (Kermanshah et al., 2001) [11] is proven to be the cause of the anti-fertility effect. (2003) [12] Adebisi et al. The harm that BITC can cause to the endometrium, which prevents conception and as a result, having a negative impact on the implantation (Adebisi et al., 2003) [13] Amino acids are abundant in seeds as well, and fragrant oil extracted, used to treat sickle cell disease and poisoning-related issues (Saran and Choudhary 2013) [14, 15] making chewing gum, coagulating milk, making beer, and making juice. handle wool, make pet food, and prepare cereals. Dehairing skins before dyeing, adding an adjuvant, and combination of proteolytic enzymes papain and for rubber synthesis chymopapain. Numerous amino acids can be found in papaya seeds. especially in the sarcotesta yellow to brown in colour. For fragrance oil, the powdered, sun-dried seeds were crushed. images of unripe papayas collected at the Central Food Technological Research Mysore's Indian Institute White seeds produced 16.1% more than black seeds comprised 26.8%, and it was assumed that the oil uses for both industry and food. dried, sweetened, and air-dried papaya seeds showed a significant effect on human intestinal parasites without having a significant negative effect. Papaya seeds are a nutritious food. affordable, risk-free, widely available, natural, and only one therapy and protect people from intestinal parasites, especially in tropical

- Health benefits of papaya seeds
- **General Nutritional Comp**



The steadily rising cost of conventional feedstuffs has pushed the use of agroindustrial byproducts in poultry diets. Among the papaya seed, an agricultural byproduct, has been the potential of feed ingredients has been widely examined for chicken. Substances in the latter byproduct include levels of crude protein,



fat, and ash that are significant possibly used by the hens. [19'20'21'22] demonstrates the dried papaya seed meal's approximate composition. There are significant differences in the nearby composition. papaya seed tions. It appears that the variations in the crops' varietals, ripening stages, and climatic conditions may be to blame for the different proximate communications.[23'24] Positions of dried papaya seeds

➤ **Effect of smooth muscle**

Papaya seed ethanol extract, at 0.1 to 6.4mg/ml, inhibited jejunum contraction in a concentration-dependent manner and was found to be significantly irreversible. As a result, the extract has the potential to reduce the ability of isolated rabbit jejunum to contract.

➤ **Help of Weight loss**

Papaya seeds contain a lot of fibre. They maintain a healthy digestive system, which aids in the elimination of toxins from our bodies. They also assist in regulating our metabolism and stop the absorption of fat by our bodies. This lessens the risk of obesity.

➤ **Helpful for Dengue and malaria**

Due to their antibacterial and anti-inflammatory qualities, papaya seeds are also frequently used to treat dengue and malaria.

➤ **Anti cancer properties**

Strong antioxidants called polyphenols are found in papaya seeds. They guard our body against various malignancies.

The antioxidant beta-carotene, which is present in papayas, may lower the chance of developing cancer. A study published in the journal *Cancer Epidemiology and Prevention Biomarkers* suggests that diets high in beta-carotene may help prevent prostate cancer in younger men.

➤ **Lower cholesterol levels**

Papaya seeds are a great source of oleic acid and other monounsaturated fatty acids. By lowering bad cholesterol, these fatty acids control blood cholesterol levels (LDL cholesterol). Papaya seeds contain a lot of fibre. The body's cholesterol levels are decreased with the aid of fibre. Consuming papaya seeds thereby keeps our bodies' levels of cholesterol in a healthy range.

➤ **Diabetes**

- According to studies, eating a high-fiber diet lowers blood glucose levels in persons with type 1 diabetes, and it may also enhance lipid, insulin, and blood sugar levels in those with type 2 diabetes.
- About 3 grammes of fibre, or about 17 grammes of carbohydrates, are present in one small papaya.

➤ **Heart diseases**

- Papaya's high fibre, potassium, and vitamin levels all work together to prevent heart disease. The greatest significant dietary modification a person can make to lower their risk of cardiovascular disease is an increase in potassium intake while decreasing sodium intake.

➤ **Papaya seed good for hair growth**

As you have already read, papaya seeds are packed with nutrients that the body needs. Vitamin A found in it aids in taming frizzy, dry hair. Papaya seeds can be dried, ground, and combined with honey to make a hair mask.

According to studies, a lack of protein in the body might result in hair loss and thinning hair. Because papaya seeds are high in protein and folic acid, they encourage hair development. Papaya seeds also aid in



the eradication of dandruff since they are high in antioxidants and have antibacterial qualities.

➤ **Papaya Seeds benefits for Skin**

In addition to being good for our general health, papaya seeds provide the following.

➤ **Advantages for our skin**

- **Anti_aging:**
Antioxidants are necessary for treating wrinkles and fine lines on our skin. Lycopene and other antioxidants found in papaya seeds help to keep the skin young.
- **Acne management:**
The papain enzyme, which is found in papaya seeds, helps to lessen acne inflammation. Additionally, papaya seeds are a good source of vitamin A, which helps to treat acne.
- **Treats Pigmentation:**
Papaya oil, which is abundant in vitamins and fatty acids, can be used on the skin to lighten pigmentation. Papaya seeds can be used to whiten skin.



➤ **Reduced inflammation**

Papaya seeds have been shown to be useful at reducing inflammation. Vitamin C and other components like alkaloids, flavonoids, and polyphenols are abundant in papaya seeds. These substances are all anti-inflammatory in nature. As a result, they help to prevent and treat inflammation in conditions including gout, arthritis, and others.

➤ **Side effects of papaya seed**

Consuming too much while pregnant could be detrimental to the developing foetus. Papaya seed eating in excess can reduce sperm count in men, which can reduce fertility. Papaya seed ingestion in excess might result in diarrhoea. Consuming excessive amounts of papaya seeds is not advised.

for breastfeeding moms. If taken in excess, the benzyl glucosinolate found in papaya seeds can cause food poisoning. Make sure the papaya latex does not come in contact with your skin when cutting the fruit. When applied directly to the skin, papaya latex, an enzyme, can make the skin feel like it is burning.

➤ **Dosage for of papaya seed.**

When applied directly to the skin, papaya latex, an enzyme, can make the skin feel like it is burning. One teaspoon of papaya seed per day is the maximum amount that should be ingested.

Also see 14 Health Benefits of Pumpkin

• **Conclusion**

Papaya seed is a high protein agricultural byproduct that has growth promoting properties as well as antibacterial, antiparasitic,

immunomodulatory, and antioxidative properties that make it a valuable alternative to antibiotics as a functional feed ingredient for chicken. A thorough investigation is required to clarify the functions of papaya seed in poultry

➤ **Mechanism of Functions of Papain**

The cysteine 25 portion of the triad in the papain is the mechanism by which the enzyme's function is made possible. The attack site for the carbonyl carbon in the skeleton of the amino terminal part of the peptide chain is released. As such occurs in all of the protein's peptide chains, the protein disintegrates. The process through which it malfunctions Cys25 is deprotonated by His159 in peptide interactions. Asparagine175 aids in the orientation of His159's imidazole ring. to make this deprotonation possible. Despite being far away. These three amino acids are close together in the chain. due to the folding structure, closeness. However, enzyme with a these three combining amino acids at the active site to provide this variety of distinct uses. The carbonyl carbon of a peptide backbone is then attacked by Cys25 through a nucleophilic reaction. (1990, Menard et al.; 1999, Tsuge et al.) [16,17] In Cys 25 and His 159 are believed to be the active location of papain. be a thiolate imidazolium ion pair that is catalytically active. Peptidic or non-peptidic inhibitors can effectively block papain. . (Guo et al., 1995) [18] It is the inactivation. because the active site's stable S-NO bond has formed Papain (S-nitroso- Cys25) (Xian et al., 2000) [19]

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