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Medicinal Properties of Papaya (*Carica papaya Linn.*) and its Sensory Evaluation

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Abstract: ***Papaya (*Carica papaya *L.) is a Popular and important Fruit tree in Tropical and Subtropical parts of the World. The Fruit is consumed Worldwide as fresh Fruit and Vegetable or used as processed product. The Fruit is Healthy and delicious and the whole plant parts including Fruit, Root, Bark, Peel, Seeds and Pulp are also known to have Medicinal properties. The many benefits of Papaya are owed due to high content of Vitamin A, B and C, Proteolytic Enzymes like Papain and Chymopapain which have Antiviral, Antifungal and Antibacterial properties. During the last few Years, major insight has been achieved regarding the Biological activity and Medicinal application of Papaya and now it is considered a valuable Neutraceutical Fruit plant. In the present review, nutritional value of the fruit and Medicinal properties of its various parts have been discussed to provide collective information on this multipurpose commercial fruit crop.***

Keywords: Papaya (*Carica papaya Linn.*), Antiviral, Biological activity, Neutraceutical Fruit plant, Nutritional value

1. Introduction

The papaya tree belongs to a small family — Caricaceae having four genera in the world. The genus ***Carica* Linn.** is represented by four species in India, of which ***Carica papaya* Linn.** is the most widely cultivated and best-known species. Among the other species, ***C. cauliflora* Jacq.**, ***C. pubescens* Lenne & K. Koch** and ***C. quercifolia* Benth. & Hook.f. ex Hieron.** are possible sources of breeding material for inducing frost and virus resistance in cultivated papaya. The fruits, leaves and latex obtained from papaya plant are used medicinally and for various other purposes. Papain, a major chemical compound extracted from fruit and stem latex is used in brewing and wine making and in the textile and tanning industries1-3. Papaya contains broad spectrum of phytochemicals including, polysaccharides, vitamins, minerals, enzymes, proteins, alkaloids, glycosides, fats and oils, lectins, saponins, flavonoids, sterols, etc. (Table 1) The present paper deals with origin and distribution, brief morphological characters, nutritional value and results of reported research findings on its medicinal properties.

Nutritional value of Papaya

Papaya is a common man's fruit, which is reasonably priced and has a high nutritive value. It is low in calories and rich in natural vitamins and minerals. Papaya places first among the fruits for vitamin C, vitamin A, riboflavin, folate, calcium, thiamine, iron, niacin, potassium and fibre. The comparative low calories content (32 kcal/100g of ripe fruit) makes this a favourite fruit of obese people who are into weight reducing regime. Papaya has more carotene compared to other fruits such as apples, guavas, sitaphal and plantains, which help to prevent damage by free radicals. Unripe green papaya is used as vegetable, it does not contain carotene but all other nutrients are present (Table 2). It is also used in salads, pies, sherbets, juices and confections. Papaya when consumed regularly will ensure a good supply of vitamin A and C, which are essential for good health especially for eyesight and can help to prevent early age blindness in children. The fruit is a rich source for different types of enzymes. Papain, vegetable pepsin present in good amount in unripe fruit is an excellent aid to digestion, which helps to digest the protein in food at acid, alkaline or neutral medium. Thus, it can be prescribed for dyspeptic patients, as papain may help in the digestion of proteins. The celiac disease patients, who cannot digest the wheat protein gliandin, can tolerate it, if it is treated with crude papain. Papaya has the property of tenderizing meat. This knowledge is being put to use by cooking meat with raw papaya to make it tender and digestible3, 5. The fermented papaya fruit is a promising nutraceutical as an antioxidant. It improves the antioxidant defence in elderly patients even without any overt antioxidant deficiency state at the dose of 9g/day orally6, 7. The papaya lipase, a hydrolase enzyme tightly bonded to the water insoluble fraction of crude papain, is considered as a "naturally immobilized" biocatalyst8. The dried fruit skin is a potential source as dietary ingredient for broiler chickens, it gives similar food consumption, food conversion efficiency, survivability and meat yields to a control diet when used up to 120g/kg of diet9. Fouzder SK *et al* have reported that, dried papaya skin could safely be used up to 90g/kg in the diet of growing pullets10. The papaya seed is also used in the ethnoveterinary practices.

Table1: Nutritive value of 100g of Papaya fruit

Constituents	Ripe papaya	Green papaya
Protein	0.6g	0.7g
Fat	0.1g	0.1g
Crude fibre	0.8g	0.9g
Carbohydrate	7.2g	5.7g
Energy	32 Kcal	27 Kcal
Total carotene	2,740µm	0
Beta carotene	888µm	0
Minerals	0.5g	0.5g

Medicinal and Pharmacological properties

Many biologically active phytochemical(s) have been isolated from papaya and studied for their action, recently an antifungal chitinase has been gene cloned and characterized from papaya fruit. The chitinase is classified as class IV chitinase based on its amino acid sequence homology with other plant chitinases. The recombinant papaya chitinase also has antibacterial activity. The purified chemopapain from commercially available spray dried latex of the fruits has shown immunological properties. The anthelmintic activity of papaya seed has been variously ascribed to carpaine (an alkaloid) and carpasemine (later identified as benzyl thiourea) and benzylisothiocyanate, cysteine proteinases from papaya fruit have also been reported20. Carpaine, an alkaloid with an intensively bitter taste and a strong depressant action on the heart.

Antimicrobial Properties of Papaya

The seed of papaya has antimicrobial activity against *Trichomonas vaginalis* trophozoites. The report suggests the use of papaya seed in urinogenital disorder like trichomoniasis with care to avoid toxicity. The seed and pulp of papaya was shown to be bacteriostatic against several enteropathogens such as *Bacillus subtilis, Enterobacter cloacae, Escherichia coli, Salmonella typhi, Staphylococcus aureus, Proteus vulgaris, Pseudomonas aeruginosa* and *Klebsiella pneumoniae* by the agar up plate method. Purified extracts from ripe and unripe fruits also produces very significant antibacterial activity on *S. aureus, Bacillus cereus, E. coli, P. aeruginosa* and *Shigella flexneri*. The aqueous extract of fruit exhibited antimicrobial activity and promoted significant wound healing in diabetic rats. The seeds of irrespective stage of fruit maturity have bacteriostatic activity on Gram positive and Gram negative organisms, which could be useful in treating chronic skin ulcers. The papaya seed macerate has a clinical potential on conjugal R plasmid transfer from *Salmonella typhimurium* to *Escherichia coli,* on *in vitro* and in the digestive tract of genotobiotic mice. Herbal formulations containing papaya leaves and root or leaves alone as one of the constituent has antibacterial activity against *Salmonella typhi, S. paratyphi* and *S. typhimurium*; however, water, acetone and ethanol extract of papaya leaves showed no microbicidal activity.

Antimalarial Properties of Papaya

The petroleum ether extract of the rind of raw papaya fruit exhibits significant antimalarial activity. There may be significant commercial potential inextracting the active element from this plant, which grows abundantly throughout the tropics and the rind of which isdiscarded as waste, can be exploited for antimalarial activity.

Antifungal Properties of Papaya

The latex of papaya and Fluconazole has synergistic action on the inhibition of *Candida albicans* growth. This synergistic effect results in partial cell wall degradation (as indicated by transmission electron microscopy observations). Latex alone is statically effective on *C. albicans* when added to a culture during the exponential growth phase and approximately 60% was achieved. This fungistatic effect is the result of cell wall degradation due to a lack of polysaccharides constituents in the outermost layers of the fungal cell wall and release of cell debris into the culture medium. Latex proteins appear to be responsible for antifungal action and minimum protein concentration for producing a complete inhibition was reported as about 138mg/ml.

2. Methodology

Characterizations of Nutritional profile of Papaya

- Determination of Fat percentage
- Determine of Protein percentage
- Determination of Carbohydrate percentage
- Determination of total Energy
- Determination of total ash
- Determine Iron percentage

Source: The following tests were determined at the RFRAC (Regional Food Analysis Center) Lucknow

3. Result and Discussion

Determination of Papaya Candey

- Fat
- Protein
- Carbohydrate
- Energy, K Cal
- Total Ash
- Iron

3.1 Determination of Nutrition Composition of Papaya by Products

Nutritive value of experimental sample (100g).The result shown in the form of table below.

3.2 Fat, Protein, Carbohydrate, Iron, Total Ash and Energy K Cal.

Table 2.1: Nutritional Content of Papaya Candey

Parameter	Experimental
Fat	10.65
Protein	6.81
Carbohydrate	67.64
Energy, K Cal	394
Total Ash	1.16
Iron	3.8

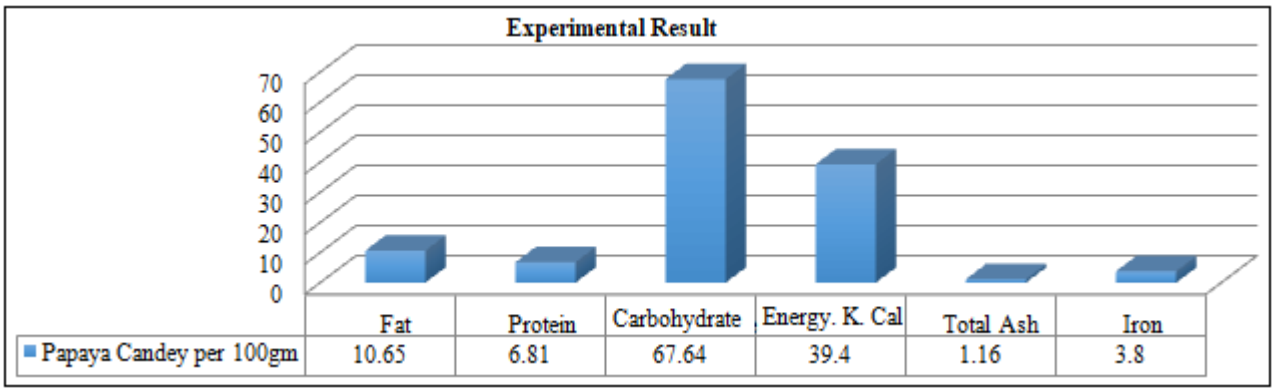

Figure 1: Graphical Representation Nutritional value of Papaya Candey

4. Summary and Conclusions

4.1 Sensory evolution of the different developed products

So the prepared Papaya by product(Papaya Candey, Papaya Chutney and Papaya Jam) under gone sensory evaluation to find the most accepted product. For the sensory evaluation comparative test for colour, consistency, flavour and absence f defects parameter we done to find out most appropriate supplement. From the above panelist member and it gets highest scoring, then after sample T1 sample T2 and sample T3 respectively.

4.2 Analysis the material composition of the different developed product Papaya by products

Nutritional contents of Papaya by products(Papaya Candey, Papaya Chutney & Papaya Jam) was tested by RFRAC, Lucknow and the result was as follows Fat 10.65%, Protein 6.81%, Carbohydrate 67.64%, Energy K Cal. 39.4%, Total Ash 1.16% and Iron 3.8% each content per 100g.

5. Recommendation

- Of the six ber cultivars studied, Sanaur, Umran and Mehrun are recommended for the preparation of candy by slow method.
- Considering the quality and nutritional attributes studied, the ber candy prepared using slow method increases its shelf life and overall acceptability is upto 240 days while to the candy prepared by quick method it is upto 120 days at room temperature storage.
- Freeze storage of candy increases its shelf life than room temperature storage.

References

[1] **Smita Verma*, 2Rajeev Kumar Varma, 3Shweta Singh** Department of Pharmacology, Prasad Institute of Technology, Jaunpur Department of Pharmaceutical Chemistry, Prasad Institute of Technology, Jaunpur 2017

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[5] **Farkhanda Manzoor,* Ruhma Syed and Azka Syed** *Department of Zoology, Lahore College for Women University, Lahore, Pakistan J. Zool., vol. 45(1), pp. 19-26, 2013.*