International Journal of Advances in Engineering and Management (IJAEM)
Volume 5, Issue 7 July 2023, pp: 708-712 www.ijaem.net ISSN: 2395-5252

Nutritional Evaluation and Shelf Life Studies of Papaya Papad

[1]Elitam Jeevan Kumar, [2]Anil B, [3]Neeti Harshitha M
[1]MSc Student, [2]Head and Professor, [3]Lecturer
Department of Nutrition, Capital Degree and PG College, Shapur Nagar, Hyderabad, Telangana, India

Date of Submission: 20-07-2023 Date of Acceptance: 31-07-2023

ABSTRACT
Papayas are a soft, fleshy fruit that can be used in a wide variety of culinary ways. The study was aimed at develop papaya Papadand its nutritional importance; the ingredients used are Papaya, Sago flour, Salt, Black pepper, Sunflower oil to prepare papaya papad. The product was developed using three different variations They were weighed accurately and three different compositions were obtained. Sample 1 has the composition of papaya(30g), sago flour (100 g), salt (2g), black pepper(1.5g), sunflower oil (20g). The sample 2 has the composition of papaya(40g), sago flour (100 g), salt (2g), black pepper(1.5g), sunflower oil (20g). The sample 3 has composition of papaya(50g), sago flour (100g), salt (2g), black pepper(1.5g), sunflower oil (20g). Based on the sensory evaluation sample C showed highest score. The sample C was highly nutritious and had the nutritional content of energy – (340 kcal) CHO-(82.5 g) Fat-(0.20 g) Protein – (2.10) Fibre- (1.39 g) Calcium- (378 mg) Sodium- (1853 mg) Iron- (0.82 mg) Total ash- (5.23 g) respectively.Papaya helpprotectagainstanumberofhealthconditions.Age-related maculardegeneration such as Bonehealth, Diabetes, Heartdisease, Inflammation, Asthmaprevention, Cancer, Skinandhealing, Hairhealth.

Key Words: Papaya, Nutritional analysis, Sensory analysis, Papad

I. INTRODUCTION

The papaya, a previously exotic and rare fruit, is now available at most times of the year. The possible health benefits of consuming papaya include a reduced risk of heartdisease, diabetes, cancer, aiding in digestion, improving blood glucose control in people with diabetes, lowering blood pressure, and improving wound healing. (Megan Ware,2017).

The papaya tree (Carica papaya L.) is a tropical American fruit tree. It is grown worldwide in tropical and sub-tropical climates. According to a recent papaya production report (2020), India is the world's largest producer of papaya, generating 13.9 million tonnes (mt) per year, or 43% of global papaya production. In contrast, the United States is the world's largest consumer of papaya. (Koul, B., et al (2022).

Papaya is common man fruit, which is reasonable priced and has a high nutritive value. It is low in calories rich in vitamin and minerals. Papaya places first among fruits for Vitamin C, Vitamin A, riboflavin, folate, calcium, thiamine, niacin, potassium and fiber. This fruit has an excellent acceptance in the global market based on its high nutritional value, lesser calories with a rich amount of dietary fibre, vitamins and antioxidants at a reasonable price (Ali et al., 2011).

In Malaysia, the export value had reached 7.44 million USD by exporting more than 19.02 million tonnes of papaya fruit (FAOSTAT, 2019). However, the exporting value and volume were hampered compared to 2017 by 18.8% and 25.3% respectively (FAOSTAT, 2019). These values are estimated to be further reduced in 2020 as the COVID pandemic had an impact on the transportation schedule and demand of the consumer, leading to an oversupply of the fruit which further led to wastage in the storage (FAO., 2020) (Tan, G. H., Ali, A., & Siddiqui, Y. (2022).

II. MATERIALS AND METHODS

2.1 Raw Materials procurement

The raw materials Sago flour, Papaya(ripened), Salt, Black pepper purchased from Local Market Hyderabad, India. The Present study was carried out at Dept. of Nutrition Lab in Capital Degree and PG College, Hyderabad, Telangana, India.

2.2 Preparation of Papaya Papad

In a large mixing bowl, combine the sago flour (grind the sago in to thin flour, before combining the ingredients boil the sago flour and water for 15minutes under flame, Papaya

International Journal of Advances in Engineering and Management (IJAEM)
Volume 5, Issue 7 July 2023, pp: 708-712 www.ijaem.net ISSN: 2395-5252

smashremove seeds from the papaya fruit), black pepper, saltadd water (required quantity), a little at a time, and mix the ingredients together to forms semi solid dough. Knead the dough for about 5-7 minutes.Place the semi solid dough into small portions and place on clean surface use a plastic cover. Flatten each portion with a round vessel or hand (Wash your hands thoroughly) to form a thin, round shape. Spread the papad on a clean, dry surface, and let them dry in the sun for a day. Alternatively, you can also dry them indoors by placing them on a tray in a well-ventilated room.Once the papad have dried completely, you can store them in an airtight container for up to a month.

Formulation of Papaya Papad

Table 1 shows formulation of papad, the Sample 1 has the composition of papaya (30g), sago flour (100 g), salt (2g), black pepper(1.5g), sunflower oil (20g). The sample 2 has the composition of papaya(40g), sago flour (100 g), salt (2g), black pepper(1.5g), sunflower oil (20g). The sample 3 has composition of papaya(50g), sago flour (100g), salt (2g), black pepper(1.5g), sunflower oil (20g).

Table 1: Formulation of Papaya Papad

Ingredient's	Sample 1	Sample 2	Sample 3
Papaya (g)	30	40	50
sago flour (g)	100	100	100
Salt (g)	2	2	2
Black Pepper (g)	1.5	1.5	1.5
Sunflower Oil (g)	20	20	20

2.3 Organoleptic Evaluation

The evaluation was carried out on the three different samples after the 24 hr of preparation. A group of 20 panelist participated in the analysis to three samples were placed in front of the members with a 5point score card in order to rate the sample. The participates were asked to assess the product for overall acceptability based on appearance, color, taste texture, mouth feel, aroma.

2.4 NUTRITION EVALATION

The nutritional evaluation of best sample was analyzed as follows (Table 2).

TABLE 2: Nutritional Parameters and Methods Used for Papaya Papad

S.NO	PARAMETERS	METHOD
1	Energy(ByCalculation)	FAOMethod
2	Carbohydrates(Bydifference)	CTL/SOP/FOOD/262-2014
3	TotalFat	AOAC20th Edn.2016,920.39
4	Protein(Nx6.25)	AOAC20th Edn.2016,986.25
5	Dietaryfibre	AOAC20th Edn.2016,985.29
6	TotalSugars	FSSAIManual2015 -Beverages, SugarsandConfectioneries
7	SodiumasNa	AOAC20th Edn.2016,969.23
8	CalciumasCa	IS5949:1990(RA.2003)
9	IronasFe	AOAC20th Edn.2016,999.11
10	Total ash	IS 12711: 1989(RA.2020)

\

International Journal of Advances in Engineering and Management (IJAEM)
Volume 5, Issue 7 July 2023, pp: 708-712 www.ijaem.net ISSN: 2395-5252

2.5 Microbiological Analysis

Microbial analysis such as Total viable count, Coliform, E. coli, Salmonella, Staphylococcus aureus, Yeast, Mold carried out after 20days of study by procedure followed by FSSAI and Manual.

2.6 Statistical Analysis

The data obtained by sensory analysis is subjected to mean and deviation and it was statistically calculated by ANOVA -single factor using a significance (α) of 0.05.

III. RESULTS AND DISCUSSION

3.1 Organoleptic Evaluation

Table 3Organoleptic Evaluation of Papaya Papad

Sensory Parameters	Sample1	Sample2	Sample3
Aroma	3.5175±0.550	3.5±0.760	4.175±0.634
Appearance	2.855±0.630	3.525±0.379	4.37±0.645
Texture	3.035±0.596	3.775±0.658	4.37±0.645
Taste	2.655±0.46	3.975±0.379	4.175±0.634
Mouthfeel	2±0.1622	3.63±0.682	4.65±0.400
Overall Acceptability	2.225±0.412	3.75±0.596	4.625±0.393

Table 3 shows the mean and standard deviation of the sensory scores for different parameters.Theorganoleptic studywascarriedoutinCapitalDegreeandPGCollege, Hyderabad,Telangana, India.In terms of aroma of sample, A (3.51); sample B has score of 3.5 and the sample C has the highest score of 4.175.

For the appearance it is the visual aspect of the product Sample A has aappearance score of 2.85, Sample B (3.52) and Sample C has the highest mean score of 4.37. The texture of the sample shows as the result, the sample A has score of 3.035, Sample B has a mean score of 3.77 and Sample C has the highest mean score of 4.37.In terms of taste the sample A score of 2.655, Sample B has a mean score of 3.9 and Sample C has the highest mean score of 4.1.The sample C showed to have higher mean value across all the attributes indicating better sensory experience compared to sample A and sample B.

NUTRITIONAL ANALYSIS OF THE PAPAYA PAPAD

Table 4 shows the selected sample C had an energy 340kcal/100g, carbohydrates 82.5g/100g, total fat 0.20 g/100g, protein 2.10 g/100g, dietary fibre 1.39 g/100g, total sugars BDL(DL:2.0)g/100g, sodium as Na 1853 mg/100g, calcium as Ca 378 mg/100g, iron as Fe 0.82 mg/100g, total ash 5.23 mg/100g.

Table 4: Nutritive values of the selected papaya Papad

S.NO	PARAMETERS	UNITS	RESULTS
1	Energy	kcal/100g	340
2	Carbohydrates	g/100g	82.5
3	TotalFat	g/100g	0.20
4	Protein	g/100g	2.10
5	Dietaryfibre	g/100g	1.39
6	TotalSugars	g/100g	BDL(DL:2.0)
7	SodiumasNa	mg/100g	1853
8	CalciumasCa	mg/100g	378

International Journal of Advances in Engineering and Management (IJAEM)
Volume 5, Issue 7 July 2023, pp: 708-712 www.ijaem.net ISSN: 2395-5252

9	IronasFe	mg/100g	0.82
10	Total ash	g/100g	5.23

3.2 MICROBIOLOGICAL PARAMETERS OF THE PAPAYA PAPAD

Table 5: Microbiological parameter of selected papaya papad after 1-month study

S.NO	PARAMETERS	RESULTS	UNITS	SPECIFIEDLIMITS
1	**Totalviablecount**	0.51 x10	CFU/mL	Max50
2	**Coliform**	0.49 x10	CFU/mL	<10
3	**E. Coli**	Absent	CFU/mL	Absent
4	**Salmonella**	Absent	CFU/mL	Absent
5	**Staphylococcusaureus**	Absent	CFU/mL	Absent
6	**Yeast**	0.1 x10	CFU/mL	Max2
7	**Mold**	0.1 x10	CFU/mL	Max2

Microbiological parameter of selected papaya papad after 1-month studyshown in (Table 5), the parameter listed is Total viable count, which is measured in Colony Forming units (cfu/ml) 0.51 x10 which is obtained from the selected SampleC limit for the total viable count is <100 CFU/ml.

The parameter Coliform measured in (cfu/ml) 0.49 x10 which is obtained from the selected sample, the FSSAI Manual states limit is <10 CFU/mill. The presence of E. Coli, Salmonella, Staphylococcus aureus, it is a specific bacteria commonly used as an indicator of fecal contamination. The FSSAI Manual specifies that E.Coli, Salmonella, Staphylococcus aureus, should be absent in a sample to comply with the guidelines. In the selected sample the presence of bacteria E.Coli,Salmonella, Staphylococcus aureus, are absent.

The parameter listed is Yeast, which is measured in Colony Forming units (cfu/ml) 0.1 x10 which is obtained from the selected sampleC limit for the Yeast is Max2 CFU/mill.

The parameter listed is Mold, which is measured in Colony Forming units (cfu/ml) 0.1 x10 which is obtained from the selected sampleC limit for the Mold is Max2 CFU/ml.

Papad is one of the very popular and delicious eatablethings. The proximate analysis done by Anilbukya et al (2018) in the preparation of raw banana papad showed following results of protein 21. 8%, fat (2. 5%), ash (6%), fiber (10%), energy (305 K. cal)also in comparison the score for parameters like appearance (7. 9±0. 42) taste (8. 1±0. 63) flavour (7. 7±0. 56) texture(8. 2±0. 63) and overall acceptability (8. 1±0. 31) was found. The sample T_3 was Organoleptically better than other papad samples. The nutritional values differ significantly due to the different formulations and ingredients used.

IV. CONCLUSION

The selected Papaya papad it is accepted by satisfying all the organoleptic properties such as aroma, color, texture, mouth feel, taste, overall acceptability. The papaya papad which is selected have good nutritive portion of calcium, CHO, protein and energy. The selected sample also notappeared any contamination or not found in presence of microbiological parameters such as total viable count, coliform, E. coli. The papaya papad have good source of nutritive factors which adds extra count of nutritive proportion to a meal it also makes the taste of food better.

REFERENCES

[1]. Ali, A., M.T.M. Muhammad, S. Kamaruzaman and S. Yasmeen. 2011. Effect of chitosan coating on the physicochemical characteristics of Eksotika II papaya (Carica papaya L) fruit during cold storage. Food chemistry 124(2): 620-626. DOI: 10.1016/j.foodchem.2010.06.085

[2]. Anil Bukya, KudaleSaurabh, satish and Langhi Ajay Tukaram,2018. “Preparation and standardization of papad using urad flour, raw banana and sweet potato and its self-life studies” International Journal of Current Research, 10, (03), 66158-66161.

[3]. FAO. 2020. Major Tropical Fruits Statistical Compendium 2019. Rome.

[4]. Koul, B., Pudhuvai, B., Sharma, C., Kumar, A., Sharma, V., Yadav, D., &Jin, J. O. (2022). Carica papaya L.: a tropical

fruit with benefits beyond the tropics. Diversity, 14(8), 683.

[5]. Tan, G. H., Ali, A., & Siddiqui, Y. (2022). Current strategies, perspectives and challenges in management and control of post-harvest diseases of papaya. Scientia horticulture, 301, 111139.

[6]. Ware, Megan, RDN, L.D. "What are the health benefits of papaya?" MedicalNewsToday, December 2017, https://www.medicalnewstoday.com/articles/275517