

Research Article

DOI: <http://dx.doi.org/10.22192/ijamr.2022.09.02.012>

DEVELOPMENT OF VALUE ADDED PUMPKIN SEEDS FLOUR INCORPORATED PIZZA BASE

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Abstract

Aim: The present study was conducted to evaluate the 'Development of value added Pumpkin seeds flour incorporated Pizza base. **Objective:** Develop Pumpkin seeds flour incorporated Pizza base, to analyse nutrient content, to evaluate the shelf life of the product, to calculate cost of the product and to popularize Pumpkin seeds flour incorporated Pizza base among adolescent girls. **Method and materials:** Pumpkin seeds flour incorporated Pizza base was prepared in various proportions like sample A(5%), sample B(10%), sample C (15%) and sample D(20%). Pumpkin seeds (*Cucurbita pepo*) have received considerable attention in recent years due to its health benefits. Pumpkin seeds flour is selected for the present study because of it is excellent nutrient source and have low price, have easy availability and its medicinal value. The best variation was selected by sensory analysis and the selected product was used for further study. **Result and discussion:** From the sensory analysis, the selected product was sample D (20%) on the basis of appearance, colour, texture, flavour, taste when compared to standard and other variants. Sample D had highest scores in overall acceptability. Nutrient content was observed that protein (19.2g/100g) and iron (4.62mg/100g) were high in the selected product when compared to standard product. From the microbial analysis and shelf- life studies results, pumpkin seeds flour incorporated Pizza base have no contamination was found and had good shelf life of up-to 7 days in the refrigerator. Vacuum sealed packing material was used for packing. Cost analysis showed that sample D has slightly higher cost than standard product. Pumpkin seeds are beneficial to adolescents to cure anaemia so the popularization

Keywords

Pumpkin seeds flour,
Nutrient analysis,
Sensory analysis,
Microbial analysis,
Cost analysis,
Popularization.

was done among adolescent girls. Most of the people showed a positive attitude towards the product. **Conclusion:** From the study, it is concluded that pumpkin seeds flour incorporated Pizza base was acceptable and rich in protein and iron and pumpkin seeds flour incorporated Pizza base were stored for 7 days in well packaged material.

1. Introduction

Food is the source of energy for all of our bodily functions and directly affects our body and mental function in every stage of life. New product development (NPD) is the complete process of bringing a new product in market and consist of the activities carried out by firms when developing and launching new product (Booz et al 2002).

Pumpkin seeds are known as nutritional powerhouse, as there are excellent nutrient source filled with protein, minerals mainly iron, zinc, phosphorus, magnesium, potassium, selenium and vitamins (Maheswari et al 2015). Pumpkin seeds are semi flat, feature typical ovoid shape with a conical tip while its kernels are olive green colour, sweet, buttery in texture and nutty in flavour which can be enjoyed as snack, added in desserts and savory dishes (Alfawas2004). Pumpkin seed kernels called pepitas had the following nutrient composition: Energy, Protein, minerals, vitamins, Dietary fibre, Aminoacids, Essential fatty acids, Polyunsaturated fatty acids, Phytosterols (Lim 2012).Pumpkin seeds are rich in antioxidants (Bialek et al. 2016) and antinutritional factors found in pumpkin seeds like haemoglutinin, Saponins, Tannins, Antivitamins and Phytic acids (El-Adawy and Taha 2001).These seeds plays crucial role in health like, bone protection, anxiety relief, good for heart health, reduce blood sugar, blood pressure, prevent cancers and diabetes mellitus, good for bladder health, weight loss and also good for skin and hair (Ryder et al. 2005, Hudson et al.2007, Zaineddin et al. 2012).

Objectives of the study are as follows:

- To develop pumpkin seeds flour incorporated Pizza base
- To analyse the sensory quality of pumpkin seeds flour incorporated Pizza base
- To analyse the nutrient content of standard and selected pumpkin seeds flour incorporated Pizza
- To evaluate shelf life of pumpkin seeds flour incorporated Pizza base
- To estimate the cost of the prepared product
- To popularize the product among adolescent girls

2. Method and Materials

The selected ingredient for the present study was pumpkin seeds as the ingredient enhance nutritional quality to the product. Pumpkin seeds flour is selected for the present study because of it is excellent nutrient source and have low price, have easy availability and its medicinal value.

Plate I shows the Pumpkin seeds selected for the study.



Plate I -Pumpkin seeds

2.1 Processing of Pumpkin seeds flour

Figure 1, shows the processing of Pumpkin seeds flour that is incorporated in the products at different proportion.

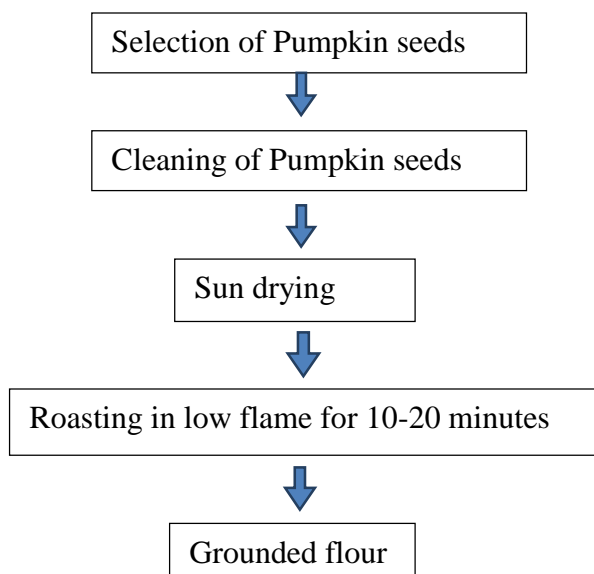


Figure 1: Processing of Pumpkin seeds flour

2.2. Preparation method of Pumpkin seeds flour incorporated Pizza base

Ingredients:

Wheat flour (80g), Pumpkin seeds flour (20g), Yeast (2g), Sugar(2g), Salt(1/4tsp), Oil(5 ml)

1. In a bowl, add all the ingredients in the proper measurement
2. Mix well and add hot water
3. Knead it to make a soft dough
4. Place the prepared dough in a clean bowl and cover with a clean wet cloth
5. Keep it rest for 1 hr
6. In a pan, grease the oil then place the dough and make it into round shape
7. Allow it to cook for 15-20 minutes.

2.3 Standardization and sensory evaluation of the product

Standardization is the process of developing and implementing technical standard, that involves the process in which the value of potential standard is fixed by the measurement with respect to a

standard whose value is known (Langowski2014). Along with standard Pizza base, four variations of pumpkin seeds flour incorporated Pizza base were prepared such as sample A(5%), sample B(10%), sample C(15%) and sample D(20%).

The prepared standard and variations were subjected to sensory evaluation by 30 untrained panel members. The standardized products were evaluated for its sensory attributes using a scorecard with 5 point hedonic scale.



Plate II - Sensory evaluation of Products



Plate III - Sample D selected as best variant

2.4 Nutrient analysis

Nutrient analysis is the process of determining the nutritional content of food. Pumpkin seeds are rich in nutrients. Thus the estimation of Protein and Iron in both standard and selected product were done.

2.5 Shelf-life evaluation

The shelf-life studies of standard and selected product were done on 1st day, 3rd day, 6th day respectively.

2.6 Cost analysis

The cost estimation was done on the basis of cost of the ingredients used in the new product. It was done to compare the price of standard product and the formulated product.

2.7 Popularization

Popularization was done to create awareness among the public about the beneficial effects of product. Pumpkin seeds flour incorporated Pizza base was popularized among the adolescent girls.

3. Results and Discussion

3.1 Comparison of the Selected Product with the Standard

Table I depicts the comparison of the sensory attributes of the selected pumpkin seeds flour incorporated Pizza base with the standard pumpkin seeds flour incorporated Pizza base.

Table I Comparison of mean scores for of standard and selected product

| S. No | Criteria | Score | Standard Product | Selected product |
|-------|------------|-------|------------------|------------------|
| 1 | Appearance | 5 | 4.93±0.25 | 4.9±0.30 |
| 2 | Colour | 5 | 4.9±0.30 | 4.9±0.30 |
| 3 | Flavour | 5 | 4.87±0.34 | 4.77±0.43 |
| 4 | Texture | 5 | 4.9±0.30 | 4.87±0.34 |
| 5 | Taste | 5 | 4.8±0.48 | 4.9±0.30 |

Table I depicts the mean sensory scores for the overall acceptability obtained through sensory evaluation of standard Pizza base and varying proportions of Pumpkin seeds flour incorporated in Pizza base with the help of score card. It is cleared that among the prepared product, Sample D had the similar mean score in all the criteria when compared to standard product. So, it can be concluded that Sample D was chosen as the best product and subjected to further analysis

3.2 Nutrient Analysis of Standard and Selected Product

When considering the nutrient content, it was observed that protein and iron were high in the selected product when compared to standard product. The protein content of standard product was 12.5 g/100g and that of pumpkin seeds flour incorporated Pizza base was 19.2 g/100g. The iron content of standard product was 2.4mg/100g and that of pumpkin seeds flour incorporated Pizza base was 4.62 mg/100g. Hence, it is proved that addition of Pumpkin seeds flour increased nutrient content of the formulated product.

3.3 Shelf-life Analysis of the Standard and Selected product

The mean sensory scores of standard and selected Pumpkin seeds flour incorporated Pizza base on storage is given in Table II.

Table II Sensory analysis of the standard and selected product

| Sino | Criteria | Score | Day 1 Mean±SD | | Day 3 Mean±SD | | Day 6 mean±sd | |
|-----------------------|------------|-------|------------------|------------------|------------------|------------------|---------------|------------------|
| | | | Standard | Selected Product | Standard | Selected Product | Standard | Selected product |
| 1 | Appearance | 5 | 4.93±0.25 | 4.9±0.30 | 4.93±0.3 | 4.9±0.30 | 4.9±0.30 | 4.87±0.34 |
| 2 | Colour | 5 | 4.9±0.30 | 4.9±0.30 | 4.9±0.30 | 4.9±0.30 | 4.87±0.34 | 4.86±0.34 |
| 3 | Texture | 5 | 4.9±0.30 | 4.87±0.34 | 4.9±0.30 | 4.87±0.34 | 4.83±0.37 | 4.76±0.36 |
| 4 | Flavour | 5 | 4.87±0.34 | 4.77±0.43 | 4.87±0.34 | 4.77±0.43 | 4.83±0.37 | 4.33±0.84 |
| 5 | Taste | 5 | 4.8±0.48 | 4.9±0.30 | 4.8±0.48 | 4.9±0.30 | 4.8±0.48 | 4.76±0.36 |
| Overall Acceptability | | | 4.88±0.33 | 4.87±0.33 | 4.88±0.33 | 4.87±0.33 | 4.85±0.37 | 4.72±0.45 |

From the results it can be concluded that Pumpkin seeds flour incorporated Pizza base had a good shelf life of up to 7 days under refrigerated condition by the use of vacuum sealed packing.

The details regarding the microbial content in standard product and selected proportion that is sample D which is a Pumpkin seeds flour incorporated on storage is given in Table III.

Table III Microbial analysis of the standard product and selected product

| Days | Name of the product | Indicator Test (CFU/gram)& Interpretation/ Standard plate count | | | |
|-------|---------------------|---|-----|----|----|
| | | G | M/S | US | PH |
| Day 1 | Standard | ✓ | | | |
| | Sample D | ✓ | | | |
| Day 3 | Standard | ✓ | | | |
| | Sample D | ✓ | | | |
| Day 6 | Standard | ✓ | | | |
| | Sample D | ✓ | | | |
| | Remark | No contamination was found in standard and sample. | | | |

(Good=G; Satisfactory=S; Marginal=M; Unsatisfactory=US; Potentially Hazardous=PH)

From the above Table III was clear that there was No bacterial growth obtained.

From microbial analysis, standard and pumpkin seeds flour incorporated Pizza base have no contamination during the storage period.

3.4 Cost Estimation of the Standard and Selected Product

The cost of standard product was **19.3** Rupees and that of pumpkin seeds flour incorporated Pizza base (best product) was **23.5** Rupees. There was a

slight difference in price between standard and pumpkin seeds flour incorporated Pizza base (4.2/-). The high cost can be worth paid for higher nutrient content of selected product. This price was affordable to all and will get nutritious product

3.5 Popularization of the Selected Product

Selected sample incorporated Pumpkin seeds flour was popularised among 30 adolescent girls as the product was rich in Protein and Iron with the help of questionnaire. The result shows that

86.7 % of adolescent girls were know about pumpkin seeds flour and 13% were didn't know about pumpkin seeds flour. Whereas 6.7% like Pizza, 6.7% didn't like Pizza. 86% were aware of the nutritional benefits and importance of pumpkin seeds flour and 13% were unaware of it. All selected adolescent girls were satisfied with the taste of our product and as well as willing to buy this product if available in the market. 83% were aware about Pumpkin seeds reduce health problems and 16.7% are not aware about it. 93% adolescent girls were known about the importance of Iron and Protein and 6.7% didn't know about it. 50% have seen in pumpkin seeds flour incorporated products in market and 50% didn't see before. All the selected adolescent girls were like pumpkin seeds flour incorporated Pizza base and no suggestions for improvement.

4. Conclusion

From the study, it can be concluded that the formulated product was acceptable. Incorporation of pumpkin seeds flour incorporated Pizza base has not affected the sensory attributes of the Pizza base. The nutritive value is also higher in the formulated product than the standard Pizza base. The nutritive value is also higher in the formulated product than the standard Pizza base. From the microbial analysis and shelf life study results, pumpkin seeds flour incorporated Pizza base had good shelf life. For packing, vacuum sealed packaging material. The high cost can be worth paid for higher nutrient content of selected product. On popularization, most of the adolescent girls showed appositve attitude towards the product. Hence all results proved that addition of pumpkin seeds flour is acceptable.

5. Acknowledgments

I express my sincere gratitude to the panel members who helped with the sensory evaluation.

References

1. Alfawas M. (2004) Chemical Composition and Oil Characteristics of Pumpkin (Cucurbita maxima) Seed Kernals. Food Sci. & Agric. Res. Centre, King Saud Univ., 5-18
2. Bialek M, Rutkowska J, Adamska A and Bajdalow E(2016) Partial replacement of wheat flour with pumpkin seed flour in muffins offered to children. *CyTA-J Food* 14:391-98.
3. Brooz, Allen, Herzog.M, Foley (2002) New product design and development *Journal of marketing* vol-6, Pp: 321-335.
4. El-Adawy TA and Taha KM (2001) Characteristics and composition of different seed oils and flours. *Food Chem*74:47-54.
5. Hudson C, Hudson S and MacKenzie J (2007) Protein-source tryptophan as an efficacious treatment for social anxiety disorder: a pilot study. *Can J Physiol Pharmacol.* 85: 928-32.
6. Langowski A, Bruiyan, Nadia (2014). "A framework for successful new product development". *Journal of Industrial Engineering and Management.* 4(4): 746-770.
7. Lim T K (ed) (2012) *Edible Medicinal and Non-Medicinal Plants.* Vol 67, pp 272-76. Springer Dordrecht Heidelberg, NewYork.
8. Maheswari P, Prasad N, Batra E, Papitas-The Underutilized By-product and the Future Cash Crop- A Review. *American International Journal of Research in Formal, Applied and Natural Sciences.*2015,31-34.
9. Ryder KM, Shorr RI and Bush AJ (2005). Magnesium intake from food and supplements is associated with bone mineral density in healthy older white subjects. *J Am Geriatr Soc* 53:1875-80.

10. Zaineddin AK, Buck K, Vrieling A, Heinz J, Flesch-Janys D, Linseisen J and Chang Claude J (2012) The association between dietary lignans, phytoestrogen-rich foods and fiber intake and postmenopausal breast cancer risk: A German case-control study. *Nutr Cancer*64:652-65.

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|  | Website: www.ijarm.com |
| | Subject: Food and Nutrition |
| Quick Response Code | |
| DOI: 10.22192/ijamr.2022.09.02.012 | |

How to cite this article:

A. Priya, Swathi.N. (2022). Development of value added pumpkin seeds flour incorporated pizza base. *Int. J. Adv. Multidiscip. Res.* 9(2): 152-158.

DOI: <http://dx.doi.org/10.22192/ijamr.2022.09.02.012>