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## HEALTHY GUT FRIENDLY PIZZA BASE FORMULATION: AN ALTERNATIVE TO REFINED FLOUR PIZZA BASE

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**Abstract:** A healthy diet is essential for good health and nutrition as it protects against many chronic non communicable diseases. In spite of growing awareness amongst people, there is a constant rise in number of health-related issues in all age groups due to misleading information, ignorance, quacks, changing lifestyle, stress, and ambitious goals. It is indeed a challenge to come out with healthy, ready to eat or cook options which are pocket friendly and meet various nutritional requirements. Thus, a functional food product was developed to meet the market demands as people prefer healthy foods. The standardized product is a Pizza base made using flour of bajra, soya bean, oats, lotus seeds, pumpkin seeds, white sesame seeds, mixed herbs & groundnut oil. A sensory evaluation was carried out with 30 consumer panelists using a 5-point Hedonic scale & attributes tested were appearance, aroma, taste, texture, & overall acceptability. The product was found to be acceptable and scored an average of four. The other aspects studied were packaging, nutritional labelling, budgeting and marketing. The product was packed in a polythene bag & sealed using a heat-sealing machine. Shelf life is 5 days but further studies are in process. The recipe being nutrient rich, can help with various conditions if consumed on regular basis. Development of this product provided an opportunity to replace refined pizza base with a healthy alternative.

**Index Terms - High fibre, protein rich, sensory evaluation, healthy snack, pizza, food product development.**

### I. INTRODUCTION

Now-a-days a lot of importance is given to nutritious food options for good health and nourishment. Healthy eating has many benefits, such as reducing the risk of heart disease, stroke, obesity, type 2 diabetes & so on. It also boosts a person's mood and provide them with more energy. Healthy eating also means replacing foods that contain trans-fats, added salt, and sugars with nutritious options. It is often observed that, literate people also fall prey to poor eating habits and health issues due to the unhealthy lifestyle and a constant ignorance towards its modification. Following a healthy life style includes both, consumption of healthy foods and practicing regular physical activity. This is a challenge with today's generation. People crave for food but also demand for healthy, ready to cook options. The products available in market contain a lot of preservatives & lack in nutritional value. Hence, there is a need for options which are packed with nutrients & are organic.

Breads are a category of foods which are easy to consume and are widely accepted by consumers. Pizza is the most common option for most of the people. But are they really healthy? Most pizza bread are either made up of refined flour or those that are claimed to be made using whole wheat flour, still contain a high percentage of refined flour.

Pizza bases are typically round breads and have a bland taste. So as an under graduate project, an attempt was made to innovate a nutritious pizza option. The food product developed was proven beneficial for all age groups. The recipe being high in fibre helps to control androgens, lowers HDL levels, & helps to reduce oxidative stress & inflammation which ultimately increases the uptake of glucose in muscles in diabetes<sup>(3)(4)(6)</sup>.



Chromium in this recipe plays a very important role since it increases the sensitivity of insulin & stimulates ovulation<sup>(1)</sup>. Phytoestrogens coming from soya bean flour & white sesame seeds helps to maintain menstrual cycle as well as have a positive impact on heart health<sup>(2)</sup>. All these benefits can be achieved by consuming the product on daily basis.

## II. STANDARDIZATION

Sensory evaluation was done on 12 panellists. It was done by scoring test using a five-point scale & attributes tested were appearance, aroma, taste, texture, & overall acceptability. The recipe developed went through 4 trials & the 4<sup>th</sup> trial proved to have the highest consumer acceptability. The sensory evaluation was done by the naïve panel members. The accepted pizza base recipe was also tested with 30 consumers to get the consumer feedback. Since the feedback results proved to be good, this recipe was finalised for further shelf-life study.

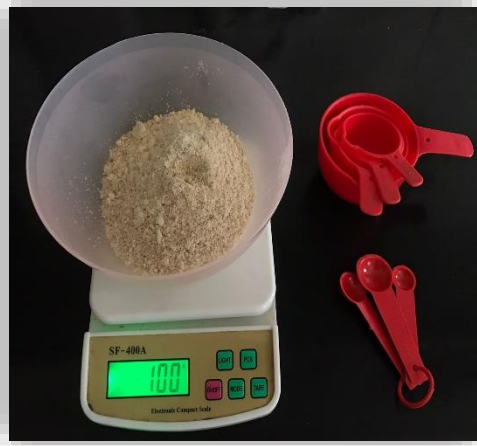
## III. MATERIALS & METHOD

Table no.1: Composition of 4 trials

Ingredients	Trial 1	Trial 2	Trial 3	Trial 4
Bajra flour	16.6%	16.6%	16.6%	16.6%
Soya bean flour	16.6%	11.1%	11.1%	11.1%
Oats	16.6%	11.1%	11.1%	11.1%
Lotus seeds	5.6%	5.6%	5.6%	5.6%
Pumpkin seeds	5.6%	5.6%	5.6%	5.6%
White sesame seeds	11.1%	5.6%	5.6%	5.6%
Mixed herbs	5.6%	2.78%	2.78%	5.6%
Oil	5.6%	2.78%	-	2.78%
Salt	2.78%	-	2.78%	2.78%
Water	83.3%	55.6%	41.7%	41.7%

Method:

- Measure the amount of ingredients according to table 1, using measuring scale, spoons, & cups.
- Mix the ingredients.
- Knead all the ingredients to make a soft dough.
- Make 3 portions of this dough.
- Roll them using a clean rolling pin to make thin flat base.
- Roast the base on a non-stick pan for 2.5 minutes each side.
- The final product can be consumed by baking/ roasting, & topped with vegetables & other toppings.



1



2



3



4

**IV. SENSORY EVALUATION OF THE STANDARDISED RECIPE**

Fig. 1 depicts the sensory evaluation results of all the 4 trials done to standardise the product. “P” stands for “Phases”. A 5-point hedonic scale card was used to see its acceptability; 1 being very bad and 5 excellent. The product was finalised based on the sensory results given by 12 naïve panellists. Phase 4 (P4) was also tested on 30 consumers for getting detailed feedback which was observed to be highly acceptable.

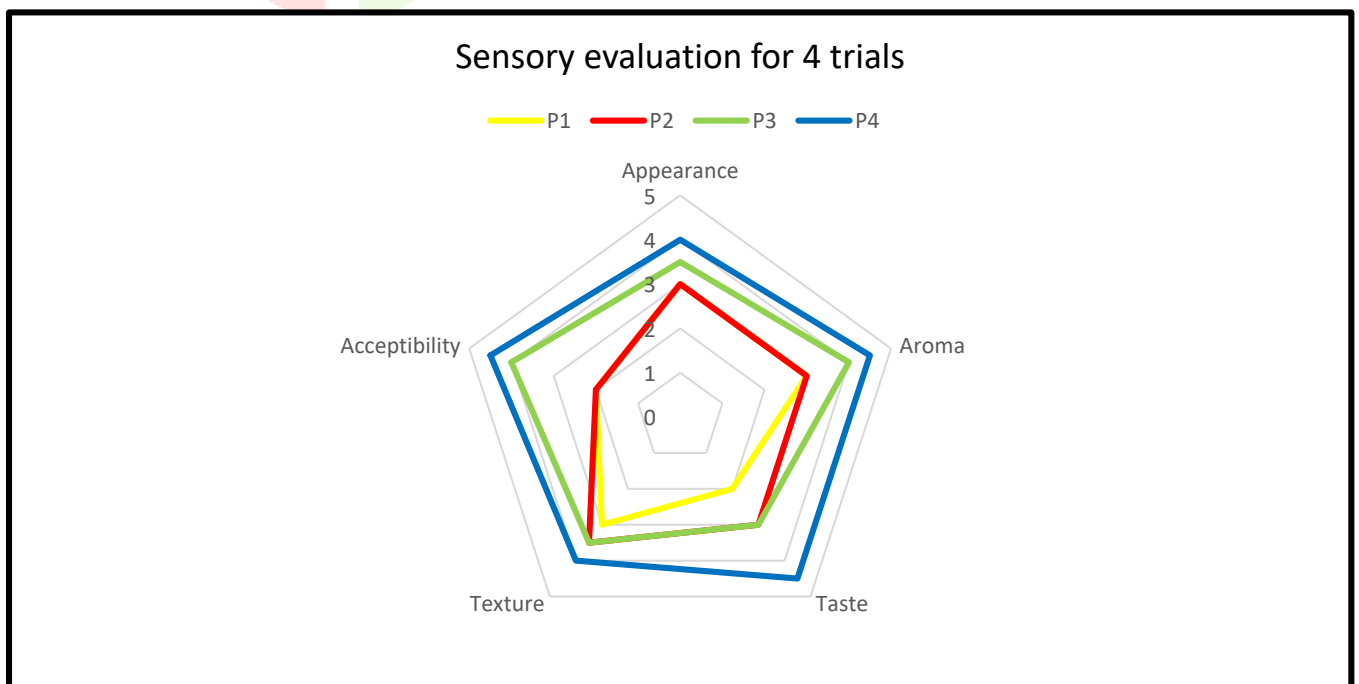


Fig. 1: Sensory evaluation results of the 4 trials

## V. PACKAGING

A lot of importance is given to packaging of a food product. The basic functions of packaging are: <sup>(9)</sup>

- Protection: - protects its contents from any damage during the storage, handling and transportation.
- Containment: - holds the contents in place.
- Identification: - helps product stand out amongst other similar products

Packaging helps to keep the product safe right from its manufacturing date till it reaches the end user. It keeps the product safe from humidity, light, and other physical factors that may spoil it in any manner. It may also improve the shelf life.

Keeping this in mind, product was packed in a transparent polythene bag of 7x10 size and 350mm gauge. Thus, a prospect can easily view the product and examine it. This type of packaging will help the product stand out amongst other similar products and at the same time saves space. It will also ensure that the product is cost effective.



## VI. BUDGETING

Budgeting is the cornerstone of any business setup <sup>(12)</sup>. We have tried to inculcate a modest budget for our product keeping in mind an average Indian middle class consumer spending habit. The product is cost effective as compared to other premium nutritional products in the market.

Table 2: Cost of 3 packet of 180g of the product

Expenditure	Cost (Rs.) of 3 packet of 180g
Ingredients	72
Miscellaneous & stationery	69
Total for 3 packets	Rs.141

Profit margin per packet is Rs.8. So, 1 packet will cost Rs.55.

Therefore, profit will be:

Table 3: Profit of the product on large scale basis

100 packs	Rs.5500/-
1000 packs	Rs.55000/-
10000 packs	Rs.550000/-
100000 packs	Rs.5500000/-

**VII. LABELLING**



Fig.2: Front side of the label



Fig.3: Back side of the label

Labelling is an important aspect in food product as it gives a clear idea to consumer if they wish to buy it in nutritional sense as well as in terms of cost. They can also assess if any ingredient can trigger their allergies.

**VIII. SHELF-LIFE STUDY**

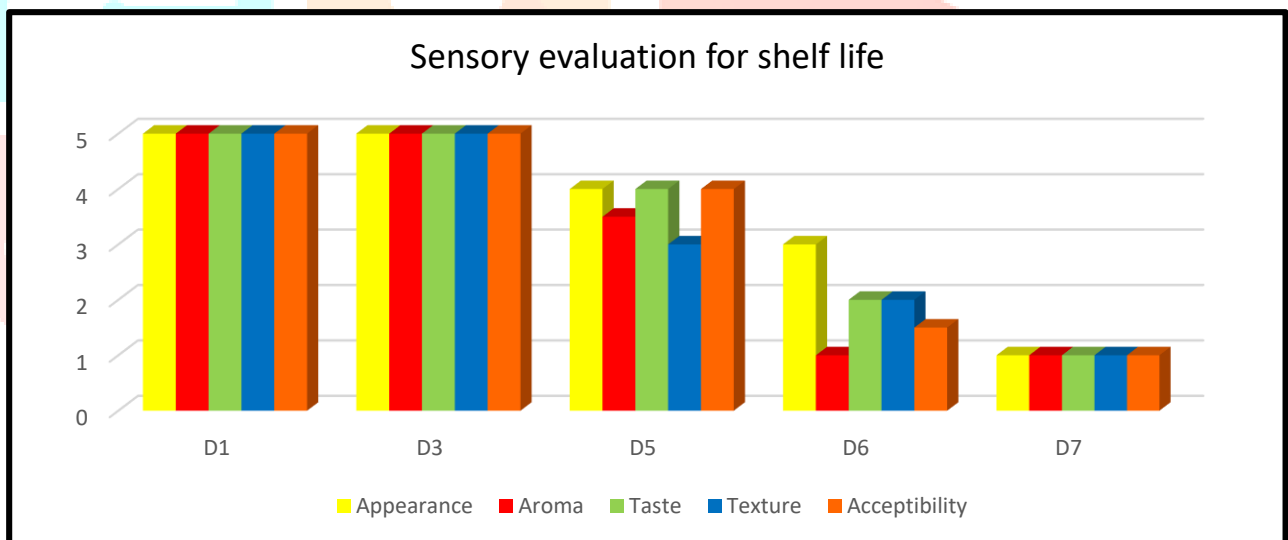


Fig. 4: Shelf-life study of the finalised product

Product was packed & kept at room temperature in last week of January, 2022. From the fig. 4 it can be seen that on 6<sup>th</sup> day spoilage started & on 7<sup>th</sup> day it was observed to be completely spoilt. Therefore, it was concluded that the shelf-life of the product is 5 days at room temperature, & if refrigerated, it can be extended for another 3 days. Though it is safe to consume earliest at possible from the manufacturing date since a slight decline in flavour & aroma was observed.

Further studies are going to be taken up on frozen pizza base.

**IX. MARKETING**

Marketing is important to learn the consumer needs and how much they value the product. Therefore, it was decided that the product will be marketed on social media platforms for advertising. Apart from that, display of the food product was arranged in the college premises to see the consumer acceptance in college on 10th of March, 2022. In-spite of product being a bit costly than regular pizza base (for students) it was greatly accepted because of its new concept and its nutritional value. A total of 30 packets were sold within an hour.

## X. CONCLUSION

The high fibre, unprocessed, & preservative free pizza base is an excellent option for snacking and can become a nutritious meal of the day. People of every age group can consume it.

This product is good for people particularly suffering from PCOS & diabetes. If consumed on daily basis, various aspects of RDA per day can be met & may also help to improve their condition.

The only disadvantage could be the low shelf-life, which can be improved on further studies.

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