

To Study the Sensory Attribute of Nutritious Pizza by Using Oats Flour and Rice Flour

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Abstract - The present investigations have been conducted to study the sensory attributes of Pizza base prepared using oats flour & rice flour. The pizza base prepared replaced the normal base made from maida. The nutritious pizza base was prepared by mixing of oats flour, rice flour and chia seeds in five different ratios named as T1 (40:40), T2 (53.3: 26.7), T3 (60:20) T4 (64:16) and T5 (66.8: 13.2). The pizza base prepared from maida kept as control (T0). The product has been organoleptically evaluated by Nine Point Hedonic Scale. The experimental pizza bases were evaluated by nutritional, sensory, physical and texture profile analysis. It is found that the preparation of sample code T5 was more acceptable with a score of 7.2 and it got higher nutritional value such as Protein, Carbohydrate, Energy, fiber, Calcium and Phosphorus. In terms of overall acceptability T3 and T5 both were acceptable. These nutritious pizza bases are being most preferred by consumers specially suffering from gluten allergies.

Key Words: Oats flour, rice flour, chia seeds, sensory, Nutritional, physical, texture analysis, gluten free

1. INTRODUCTION

Consumers are more aware the relationship between good nutrition and increasingly seek for food that in addition to nurture, provide health benefits (Burgain et al., 2011)

Oats consumption in human diet has been increased because of health benefits associated with dietary fibers such as beta-glucan, functional protein, lipid and starch components, and phytochemicals present in the oat grain. Oats belongs to the family 'Poaceae' and genus 'Avena' and are the seeds of the plant 'Avena sativa', have been used for protection of heart strokes. The nutritional amount of Whole Oat grains has protein 15-17 %, starch and sugar 58-70 %, total dietary fibre 5-14%, B glucan 2-6 %, fat 4- 9 %, dietary fibre 10-20 %. Oat bran protein 15-18%, starch and sugar 10-50 %, total dietary fibre 10- 40%, B- Glucan 5- 20%, fat 5-10 %, dietary fiber 20-35 % (Masih et al. 2013).

Compared with other cereals (wheat, rice, barley, buckwheat, and rice), oats contain higher content of protein, and the composition of oat amino acid is more reasonable. Moreover, the levels of crude fat, showing the nutritional and functional potential, in oats are much higher than that of other cereal grains, which leads oat to become an excellent source of functional food. Oat lipids are rich in polyunsaturated fatty acids, Vitamin E, and plant sterols. Judd and Truswell concluded that both the lipophilic and lipophobic

components of oat play a major role in decreasing serum cholesterol in humans. However, there is no information about the effect of these components other than beta-glucan in oat on the reduction of serum cholesterol in animals or humans. Moreover, oats are therapeutically active against diabetes, high blood pressure, inflammatory state, and dyslipidemia rather than other grains which are predominantly insoluble such as wheat or rice. This makes oats a unique cereal.

Rice flour also has been found to be one of the most suitable cereal grain flours for preparing foods for celiac disease (CD) patients (Arendt and Bello, 2008). For genetically susceptible individuals, the ingestion of gluten and related proteins trigger an immune-mediated enteropathy known as celiac disease. The symptoms of CD include steatorrhea, abdominal discomfort, weight loss or gain, tiredness, anaemia, and severe diarrhea. Currently, the prevalence of CD is estimated to affect one in 100 people worldwide. The suitability of the rice flour is attributed to its low level of prolamins compared with that of wheat flour. Optimal rice bread formulations for CD patients have been developed, which meet wheat bread reference standards for specific volume, crumb and crust color, firmness and moisture (Gallagher et al., 2004). Rice bread in its earliest stage had small amount of rice flour added to replace some wheat flour in the formula, but now bread made out of 100% rice flour is developed and sold in retail stores (Kim, 2009). The 100% rice flour bread could somewhat mislead consumers since some rice bread add up to 17% vital gluten extracted from wheat as a supplemental ingredient in their formula to improve bread-making properties; others use various food gums, emulsifiers, and enzymes, instead (Kim, 2009; Shin, 2009). Only the latter, thus, could be referred to as the so-called "gluten-free" rice bread in a strict sense.

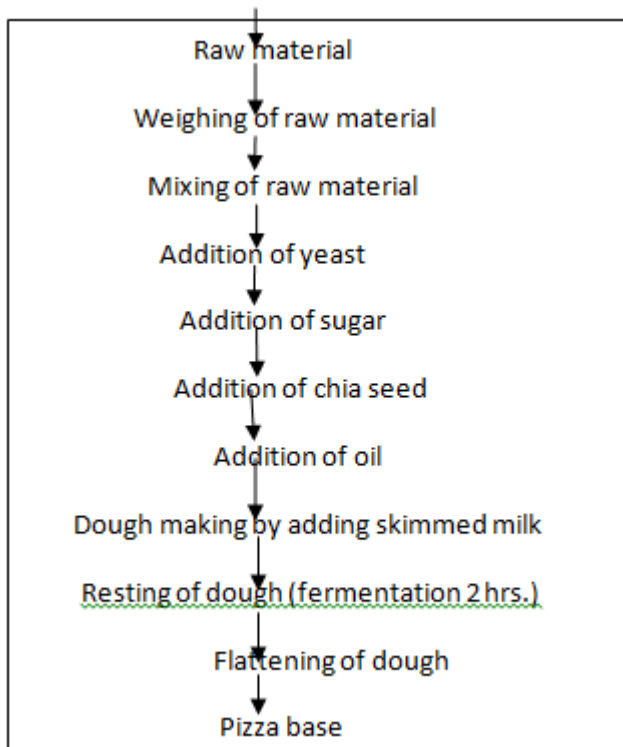
2. MATERIALS AND METHODS

The present investigation of product development of nutritious pizza followed by different processing flour.

2.1 COLLECTION OF MATERIALS

The ingredients for development of nutritious pizza viz oats, rice flour, yeast, sugar, butter, skimmed milk, baking powder, baking soda, salt, and chia seeds, the standard brands were purchased from local market of Gurgaon.

2.2 DEVELOPMENT OF NUTRITIOUS PIZZA BASE



2.3 RECIPE OF NUTRITIOUS PIZZA BASE

From the locally available market the raw ingredients were procured. For the dough, sieve the oats flour and rice flour. Mix the flour in 5 different ratios with all the ingredients i.e. yeast, sugar, baking powder, baking soda, salt and chia seeds. Make a soft dough using skimmed milk. Pre Heat the oven to 100 ° C to give the dough a warm place to rise. Remove dough from the bowl and make a ball with it. Extend the dough and place in the oven for a while. Then cover the dough with tomato sauce and the toppings. Put it back in the oven at 150 ° C for about 15 to 20 minutes.

Table- 1: Ratio of Rice Flour and Oats Flour

Ratio of Rice Flour and Oats Flour						
Treatment	T0	T1	T2	T3	T4	T5
Product use						
Maida	80	0	0	0	0	0
Oats flour	0	40	53.3	60	64	66.8
Rice flour	0	40	26.7	20	16	13.2
Total	80	80	80	80	80	80

2.4 SENSORY EVALUATION

In this study, 15 untrained members were selected randomly. All the selected members were asked to evaluate pizza base and all the essential quality attributes were needed to be score by each panel member. Different sensory attributes such as visual and organoleptic attributes like colour, texture, flavour, taste, after taste, and over all acceptability were evaluated. Nine-point Hedonic scale was used. the test was done to assess each attribute for all the products. The development sensory score card was presented to the panelist for the sensory evaluation of Muffins. At the time of evaluation general instructions were given to the panel members. Tongue cleanser was also given between to sample so that taste of one sample does not overlap the taste of other sample Each panelist had to give score from 10 according to their judgment

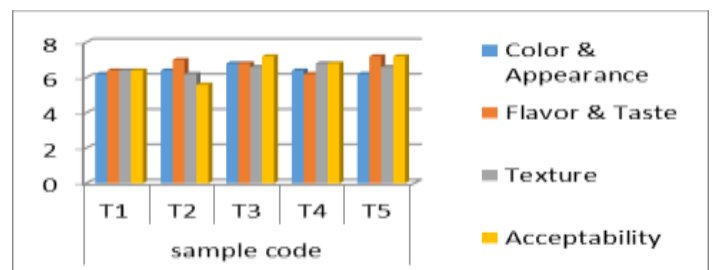
3. RESULT AND DISCUSSION

Table- 1: Nutritional Value of Samples

Nutritional Value of Samples								
sample	Energy (Kcal)	Protein	Fat (gm %)	CHO (gm %)	Fiber	Iron	Folate	calcium
T1	400 kcal	12 g	25 g,	42.1 2 g	29 g	6.62 mg	40 µg	600 mg
T2	415.5 kcal	12.4g	25g,	35 g	29.5 g	6.6 mg	40.54 µg	600 mg
T3	470 kcal	15.58g	30 g,	40g	32.4 g	7 mg	47 µg	625 mg
T4	475 kcal	16g	30.5 g,	41 g	32 g	7. mg	48 µg	628 mg
T5	486 kcal	16.54g	30.74 g,	42.1 2 g	34.4 g	7.72 mg	49 µg	631 mg

Table 1 shows the nutritional value of different samples. It is found that the nutritional value of sample T5 is good in comparison to other sample. The nutritional value of sample T4 is found to be acceptable.

Table-2: Acceptability of Samples



In table 2, It is found that in comparison to the sample T1 to T5, the preparation of sample code T5 was more acceptable with a score of 7.2 on nine-point hedonic scale. sample T3 and T5 both were acceptable in terms of their overall acceptability. Given below are the graphs representing the

samples based on their overall acceptability and other sensory attributes. And T5 is more acceptable than the controlled sample T0

4. CONCLUSION

This research on development and sensory evaluation of nutritious pizza base concluded that pizza base made from oats and rice flour with addition of chia seeds contain higher Nutritional value such as Carbohydrate, Fibre, Protein, Fat, Iron, Calcium and Folate compared to other experimental samples and traditional base made from maida. During sensory evaluation pizza base made with the ratio of (66.8: 13.2) has the better overall consumer acceptability compared to base made with the ratio of T1 (40:40), T2 (53.3: 26.7), T3 (60:20) T4 (64:16) which has the lowest overall consumer acceptability because of the bitter taste or texture. Overall the nutritious base by replacing traditional pizza base which is prepared from maida is overall acceptable.

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