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Development and sensary evaluation of premix and its products for geriatric people

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Abstract
The objective of present investigation was development product and sensary evaluation of premix flour and its products for geriatric people. The many health benefit of soybean comes from the wealth of nutrient, vitamin, organic compounds, and other including a significant amount of dietary fiber and a very large amount of protein. In terms vitamins, soybean contains vitamin K, riboflavin, folate, vitamin B6, thiamin, vitamin C and high amount of minerals. It is also good source of organic compounds and antioxidants. Sesame flour includes ample minerals and vitamins.75gms of sesame flour will fully cover the recommended daily allowance of magnesium, iron and zinc. It also provides calcium and vitamin E. sesame flour contain very high antioxidants properties because of the presence of natural sesame antioxidants – sesamol and sesamolina. In the view facts regarding nutritional quality of soybean, sesame seeds, riceflakes and papaya powder combination of different ratio of various ingredients were made to developed premix flour for different disease. Flour was prepared in different combination by using Soybean, and riceflakes papaya powder sesame seeds. Developed premix flour was used for development of standardized i.e. Biscuit, Halwa, Idli, stuffed rolls. Organoleptic evaluation of developed products was done by a panel of 10 judges using 9-point hedonic scale. The highest average score for overall acceptability was found in experimental products made by developed premix were mostly accepted by panel member.

Keywords: Developed Premix flour

1. Introduction

1.1 Premix

The Vitamins and minerals used in fortification are combined in a powdery blend called a premix. This is added to flour in the milling process or used to make fortified to flour in the milling process or used to make fortified rice kernels. Premix does not affect the taste, smell, texture, or baking quality.

1.2 Soybean

Soybean flour is one of the most economical sources of edible protein. Specially flours, produced in smaller quantities, may be more expansive. The production of edible soybean flours may take place either as an independent industrial activity or as a natural sequel of oil-mill operation. The principal differences between processing for meal and processing for edible flour are in the quality of raw material, the need for dehulling and the more rigorous control of the sanitary conditions of the plant and process.

Soybeans also contain biologically active or metabolic proteins, such as enzymes, trypsin inhibitors, hemagglutinins, and cysteine proteases very similar to papain.

1.3 Health benefits of soya bean

Soybean is hailed as the most protective bean. Soy contains 26 percent protein. It has the highest protein content amongst plant products. “Soy protein” refers to the protein found in soybeans. As animal protein contains all the essential amino acids, lacking in pulse protein, soy is often used to replace the animal proteins in an individual's diet. Most plant proteins are considered "incomplete" proteins because they are low in one or more essential amino acids. Levels of one amino acid or another are insufficient for human needs. Grains are typically low in lysine; beans are typically low in the sulfur amino acids, methionine and cysteine.

However, the level of sulfur amino acids in soybeans is higher than in other beans, and therefore soy protein is equivalent to animal protein in quality.

1.4 Rice flakes

Rice flakes are prepared from paddy. It is also popularly known as "poha". It is a fast moving consumer item and generally eaten as breakfast item. It can be fried with spices and chilly to make hot and tasty food item or milk or curd of mixed with it and then eaten. It is a also used in large quantities for making 'Chevda' and many caterers use it for thickness of gravy. Since it is a made from paddy, it is easily digestible.

1.5 Health Benefit of Rice Flakes

Rice flakes contain no saturated fat neither any cholesterol.

It is a delicious, nutritious and easy to digest snack. Poha or flattened rice flakes are a good prebiotic and probiotic food, easily and cheaply available to all. It can be soaked in water and kept overnight and could drink the water it in the morning to relieve a gassy upset stomach, the water can be flaovoured with sugar, salt and lime. Flakes are low in sodium and low in sugar and lactose free.

A gluten-free flour, rich in minerals, made from reduced-fat sesame seeds. This flour has a fine, white appearance, yet contains some15% fibre and as much as 46% protein. Sesame flour includes ample minerals and vitamins.75gms of sesame flour will fully cover the recommended daily allowance of magnesium, iron and zinc. It also provides calcium and vitamin E. sesame flour contain very high antioxidants properties because of the presence of natural sesame antioxidants – sesamol and sesamolina.

1.6 Health benefits of sesame seeds

The seeds are also very valuable sources of dietary protein with fine quality amino acids that are essential for growth, especially in children. Just 100 g of seeds provide about 18 g of protein (32% of daily-recommended values).

Papaya fruit is a rich source of nutrients such as provitamin A carotenoids, vitamin C, B vitamins, dietary minerals and dietary fibre. Papaya skin, pulp and seeds also contain a variety of phytochemicals, including natural phenols. Danielone is a phytoalexin found in the papaya fruit.

1.7 Papaya fruit health benefits

- The papaya fruit is very low in calories (just 39 calories/100 g) and contains no cholesterol; however, it is a rich source of phyto-nutrients, minerals, and vitamins.
- Papayas contain soft, easily digestible flesh with a good amount of soluble dietary fiber that helps to have normal bowel movements; thereby reducing constipation problems.

2. Objective

- To standardize and develop premix.
- To develop products using premix.
- Organoleptic evaluation of developed product.

Maryam Taghdir, *et al*, (2016) [2] assessed the effect of soy flour on nutritional, physicochemical, and sensory characteristics of gluten-free (GF) bread. In this study, corn flour was replaced with soy flour at different levels 5%, 10%, and 15% to produce a more nutritionally balanced GF bread. Physical and chemical properties, sensory evaluation and crust and crumb color were measured in bread samples. The results of evaluations showed that protein content of soy flour-supplemented GF bread significantly increased from 9.8% to 12.9% as compared to control along with an increased in fat (3.3%–4.1%), fiber (0.29%– 0.38%), and ash (1.7%–2.2%) content. Moisture (27.9%–26.5%) and carbohydrate (58.3–52.3) content decreased with the incremental addition of soybean flour. The highest total score of sensory evaluation was for the bread sample containing 15% soybean flour. The evaluation of crust and crumb showed that bread samples with 15% soy flour were significantly darker than the other bread samples. In conclusion, adding higher levels of soybean flour into GF bread can improve bread quality, sensory characteristics, and nutritional properties of bread Evlogimenov A, *et al*, (2016) studied that Sesame seed paste is a highly nutritious food product which tends to exhibit upon long time storage undesirable phenomena of oiling off and particle sedimentation. The ability of rich-in-fibre aqueous extraction powders originating from oleaginous raw materials to enhance the physical stability of sesame paste is investigated. The extraction residues remaining after treating hazelnut, sesame seed or maize germ with aqueous media in order to extract and exploit their oil bodies, were collected, dehydrated and milled into fine powders. The powders were then incorporated at various levels into a commercially available sesame paste product to assess their potential as paste stabilizers against oil separation. The solids from maize germ exhibited the highest stabilizing ability followed by the solids from hazelnut. Instead, the solids originating from the sesame seed were less effective in stabilizing the sesame paste. Shear stress - rate of shear measurements of sesame paste incorporating the extraction residue solids were conducted in an attempt to explain the different stabilizing behaviour of the three powders. The intensity of interactions between the incorporated solids within the sesame paste structure may determine the rheological properties of the blend and hence its stability against oiling off upon long time storage.

3. Materials and methods

The present study was undertaken to seed flour products to evaluate its quality. The experiment conducted during the course of investigation has been portrayed under the following heading.

The study was conducted in the Department of Food and Nutrition, faculty of Home Science, Kamla Nehru Institute of Physical and Social Sciences, Sultanpur.

Justified, judicious and scientific methodological considerations are indispensable for any investigation to deduce meaningful interferences concerning the objectives of my study. The study design reflects to the logical manner in which units of the study are assessed and analyzed for the purpose of drawing generalizations. Thus, with the view of the available resources, the best procedures for taking correct observation should be first sorted out in a logical manner so that unbiased interference can be drawn. This chapter delineates information pertaining to the research design and methodological steps used for the investigation. The research procedure has been distinctly described as under in the following heads:-

3.1 Collection of material

The required materials used for development of premix products bought were the local market of Sultanpur city. The procuring was done in single lot to avoid variation and compositional differences so that quality differences could be ruled out.

3.2 Processing of raw material
These materials were subjected to cleaning, washing and drying in the following manner.

3.2.1 Cleaning & washing
Materials were washed 5-7 times with tap water than rinsed with water to remove dust, dirt, and other adhering impurities.

3.2.2 Drying
Materials were spread on sheet in shade and covered by muslin cloth to protect from foreign particles at room temperature at 27 3^0C for 2-3 days become brittle.

3.2.3 Flour making
All above dried materials were converted in to flour separately through grinder and strained to get uniform powder.

3.3 Development and standardization of premix flour
In view of the facts regarding nutritional quality of flour soya bean, papaya, til, riceflakes combination of different percentage of various were made to develop acceptable premix

Table 3.3.1: Different combination of premix flours

Product	Premix Percentage (%)			
	Soybean	Papaya powder	Sesame seeds	Rice flakes
T_1	25	15	25	35
T_2	40	10	35	15
T_3	30	20	30	20

3.3.1 Method
- Ground the material separately after processing and sieved to get uniform texture.
- Mixed all the flour together

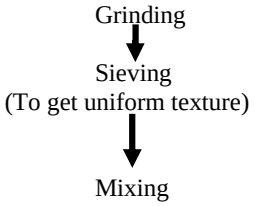

Fig 3: Flow diagram for preparation of premix

3.4 Development of products by using premix.
The best acceptable flour was used for product development as follows:

Table 3.4.1: list of selected recipes

S. No.	Recipes	Cooking Method
1.	Biscuit	Baking
2.	Halwa	Braising
3.	Idli	Steaming
4.	Veg.stuffed rolls	Deep frying

3.5 Sensory Evaluation
Standardization of the developed was carried out through organoleptic evaluation. Developed products were evaluated for their sensory characteristic like color, flavour, taste, and overall acceptability by selected 10 panel members (Swaminathan 1987) as fllows:

3.5.1 Selection of panel members
Threshold test was used for selection of panel members Convenience, experience, knowledge; willingness, interest and sincerity on the part of panel members were also considered. Thus ten members were enlisted in the panel comprised of staff members of the college of Home Science K.N.I.P.S.S.

3.5.2 Preparation of score card
For assessing acceptability of samples, a score card was developed on the basis of certain qualities looked for in food preparations such as color, appearance, aroma, texture, taste and overall acceptability. Nine point hedonic rating and (Appendix A) provided to the judges for scoring as suggested by Swaminathan (1987).

3.5.3 Method of evaluation
The processed samples were served to the panelists separately in similar containers with different codes for sensory evaluation. Care was taken to conduct the evaluation in an undisturbed environment as the environment may distract or influences the evaluation of judges.

3.6 Calculation of Nutritive value
show that the nutritive value of most acceptable flour was calculated with the help of food composition table using "Nutritive value for Indian food" C. gopalan (2010).

3.6.1 Nutritive value of soybean / 100g

Nutrient	Amount/100g
Energy	173 kcal
Protein	9.9 gm
Carbohydrate	16.6 gm
Fat	9 gm
Fiber	6 gm

3.6.2 Nutritive value of Rice flakes per 100g

Nutrients	Amount /100g
Calories	360 kcal
Protein	6.69g
Carbohydrate	86.22g
Fat	1.26g
Fibre	0.7g

3.6.3 Nutritive value of papaya powder per 100g

Nutrients	Amount /100g
Calories	39 kcal
Protein	0.61g
Carbohydrate	9.81g
Fat	0.14g
Fibre	1.8g

3.6.4 Nutritive value of sesame seeds per 100g

Nutrients	Amount /100g
Calories	567 kcal
Protein	16.96g
Carbohydrate	26.04g
Fat	48g
Fiber	1.8g

3.7 Statistical analysis

The data obtained from various parameters will be analyzed by mean and average.

Formula used for statistical analysis

Formula =

Average= $\frac{n}{N} \times 100$

4. Result and discussion

The data collected on different aspects as per plan were tabulated and analyzed statically. The results obtained from the analysis are presented & discussed chapter in the following sequence.

4.1 Calculation of nutritive value of most acceptable premix

4.1.1 Organoleptic evaluation of developed products

- Flavor and taste.
- Body and texture.
- Color and appearance.
- Over all acceptability.

Nutritive value of soybean / 100g

Nutrient	Amount/100g
Energy	173 kcal
Protein	9.9 gm
Carbohydrate	16.6 gm
Fat	9 gm
Fiber	6 gm

Nutritive value of Rice flakes per 100g

Nutrients	Amount /100g
Calories	360 kcal
Protein	6.69g
Carbohydrate	86.22g
Fat	1.26g
Fibre	0.7g

Nutritive value of papaya powder per 100g

Nutrients	Amount /100g
Calories	39 kcal
Protein	0.61g
Carbohydrate	9.81g
Fat	0.14g
Fibre	1.8g

Nutritive value of sesame seeds per 100g

Nutrients	Amount /100g
Calories	567 kcal
Protein	16.96g
Carbohydrate	26.04g
Fat	48g
Fibre	1.8g

4.2 Organoleptic evaluation of developed products by using premix.

Table 4.2.1: Organoleptic evaluation of Biscuit

Product	Flavour & taste	Body & appearance	Colour & texture	Overall acceptability
Control (T_0)	8.0	8.0	7.6	7.9
Experimental (T_1)	7.5	8	7.9	7.9
T_2	8.1	8.9	8.0	8.2
T_3	7.8	6.9	7.7	7

Table 4.2.1 shows that T_2 obtained maximum 8.1, 8.9, 8.0, 8.2 for the flavour & taste, body & appearance, colour & texture and overall acceptability respectively. While controlled (T0) obtained 8.0, 8.0, 7.6 and 7.9 for flavor and taste, Body & texture, color & appearance and overall acceptability respectively. This indicated that the control (T_2) was found to be fallen under category of "Like very much liked extremely."

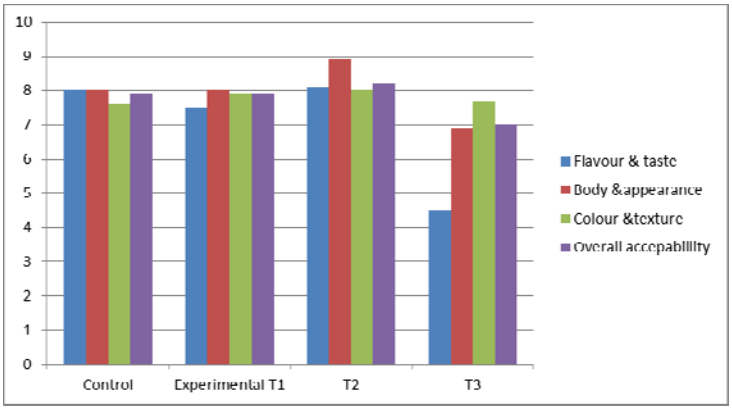

Fig 1: Mean overall acceptability of Biscuit.

Table 4.2.2: Organoleptic evaluation of Halwa

Product	Flavor& taste	Body & texture	Color & appearance	Overall acceptability
T0(controlled)	8.5	8.4	8.5	8.5
T1(experimental)	9.0	8.8	8.8	8.9
T2(experimental)	8.8	8.7	8.8	8.8
T3(experimental)	9.0	9.0	9.0	9.0

Table 4.2.2 shows that the experimental (T3) obtained maximum 9, 9, 9 and 9 for flavor &taste, body &texture, color& appearance and overall acceptability; while controlled (T0) obtained 8.5, 8.4, 8.5 and 8.5 for flavor &taste, body &texture, color& appearance and overall acceptability respectively. This indicated that the control (T_3) Halwa was found to be fallen under category of "Like Extremely".

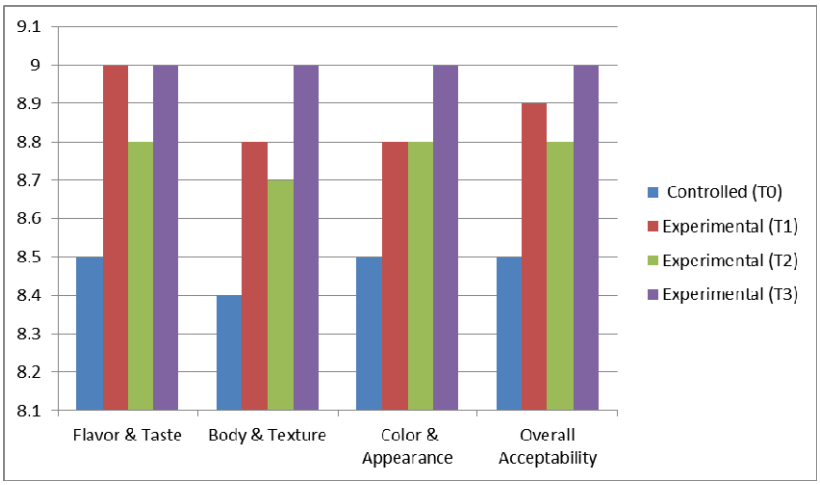

Fig 2: Mean overall acceptability of Halwa.

4. Conclusion

Premix flour of soyabean, papaya powder, Sesame seeds, rice flakes in the combination of T_1. (soyabean 25%, papaya powder15%, sesame seeds 25%, rice flakes 35%) And T2 (Soyabean 40%, papaya powder 10, Sesame seeds25%, Rice flakes15% and T3 (Soyabean 30%, papaya powder 20%, Sesame seeds 30%, Rice flakes 20%) Developed the premix was used for development of standardized product i.e. Biscuit, Halwa, idli, stuff rolls. Organoleptic evaluation of developed product was done by a panel of 10 judges by the method of hedonic test. In which flavour & taste, body & appearance, colour & texture and overall acceptability were determined. The result of premix based product for Biscuit, Halwa, Idli, stuffed rolls T0, T1, T2, T3 was best in all of treatment in case of all sensory attributes.

5. Acknowledgement

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