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Sensory and Chemical Analysis of Multinutritive Soya-flaxseed Snacks

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Abstract: ***The snacks containing wheat flour and barley cause intestinal damage in people with celiac disease, so it is necessary to remove gluten from the snack's product. Corn, rice, and flaxseed are good examples of gluten free grains. Flaxseed has long been thought to offer health benefit. It contains fiber, fat, protein and various minerals, also flaxseeds contain omega-3 fatty acid which instead present in fish, so to provide omega -3 fatty acid; flaxssed is a better option for vegan peoples. Soya bean flour provides necessary proteins and essential bioactive component isoflavone. So the snacks prepared from rice, corn, flaxseed and soya bean is another option of multinutritive diet. Normally snacks are fried in vegetable oil for their crispiness and flavour. That fried foods are typically high in Trans-fat which forms when fats undergo process of hydrogenation, which increases risk of cancer, diabetes and heart stroke so to prevent those risk frying can be replaced by baking the snacks products.***
Keywords: Celiac disease, Omega -3 fatty acid, Multinutritivediet, Trans-fat, Snacks products

I. INTRODUCTION

Soya-flaxseed snacks are baked, crunchy, spicy snacks made from four different flours; soya bean, flaxseed, rice and corn. Mashed potato and tomato powder also added to enhance its taste. They are commonly served as a snack, side dish, or appetizer. The basic snacks are baked and spiced. As name indicate snacks provide multinutritive benefits because Snacks are rich in protein provided through soya flour, carbohydrates provided through potato's and corn flour, Omega-3 fatty acid which instead present only in fish, also provided by utilizing its unique plant source like flaxseeds. Also, flaxseeds are rich in a fibre which helps in problems regarding digestion. Multinutritive Soya-flaxseed snacks are totally baked snacked product, oil used only in negligible amount at starting only for mixing spices. Tomato powder, mashed potatoes, chat masala; this ingredient work as a flavour enhancer to make snacks products tasty and acceptable by the consumers.

II. MATERIALS AND METHODS

A. Developing the Food Product

Soya flaxseed snacks consist of Soya flour, Flaxseed flour, Rice flour, Corn flour, Mashed potatos, oil, Spices like chillie powder, turmeric powder, cuminseeds, chat masala and salt. For preparing Soya-flaxseed snacks various formulations taken for preparing good quality product. During formulation only soya flour and flaxseed flour concentration is changed for knowing the of product. There are 3 formulations are taken to produce good quality product. These formulations are as follows:

B. Different Proportions of Soy-flaxseed Snacks Ingredients for Preparation of 1000 gm (1Kg) of Soy-Flaxseed Snacks

Ingredient	S_1 gm	S_2 gm	S_3 gm
Soya flour	215	310	265
Flaxseed	215	140	172
Potato	200	200	200
Tomato Powder	10	10	10
Rice flour	175	175	175
Corn flour	170	170	170
Chillie powder	10	10	10
Turmeric	15	15	15
Salt	10	10	10
Cumin	03	03	03
Chat masala	05	05	05
Oil	10	10	10
Water	110	110	110

Table No. I Different proportion of ingredients in soya flaxseed snacks

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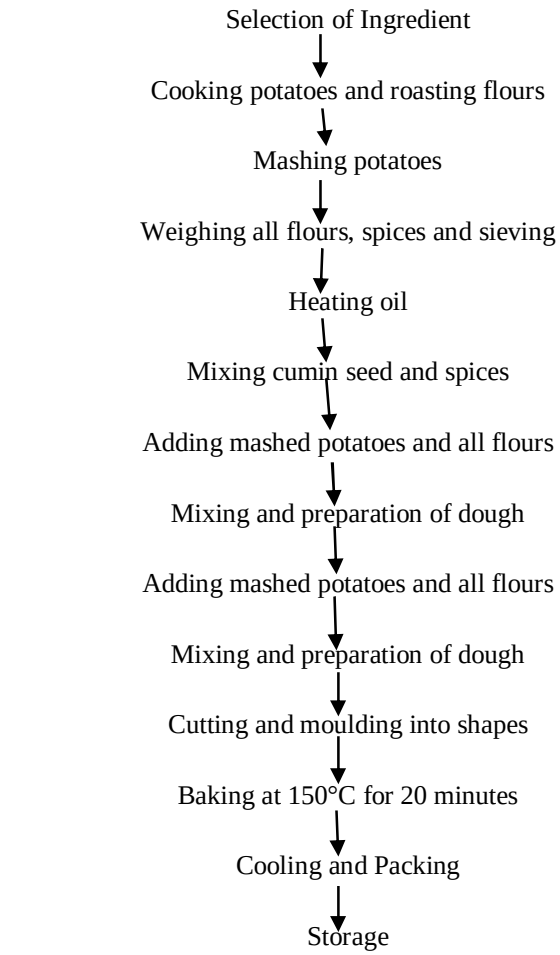

Flow chart No.1 Method of formulation of soya-flaxseed snacks

C. Accepted Formulation

Table No 1: Accepted Formulation (per 1 kg)

Ingredient	Quantity(gm)
Soya flour	310
Flaxseed	140
Potato	200
Tomato Powder	10
Rice flour	175
Corn flour	170
Chillie powder	10
Turmeric	15
Salt	10
Cumin	03
Oil	10
Chat masala	05
Water	110

Table No. II Accepted Formulation

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III. SENSORY ANALYSIS

Sensory analysis is a scientific discipline that applies principles of experimental design and statistical analysis to the use of human senses sight, smell, taste and touch for the purposes of evaluating consumer products. It requires panels of human assessors, on whom the products are tested, and recording the responses made by them. By applying statistical techniques to the results, it is possible to make inferences and insights about the products under test. Most large consumer goods companies have departments dedicated to sensory analysis. Sensory evaluation of the sample was carried out by panel members using nine point's hedonic scale and composite scoring test. Attributes like taste, color, appearance, mouth feel, flavor and overall acceptability was scored based on its intensity scaled. 9-Point Hedonic Scale has been used for the purpose. The sensory score given by the panel have been evaluated for the sensory result.

IV. NUTRITIONAL ANALYSIS

The evaluation of nutritional constituents was carried by using Rangana methods of evaluation of nutritional parameters.

V. RESULTS

A. Average Sensory score

The Soya-Flaxseed Snacks prepared by mixing soya flour and flaxseed flour of different combination are analysed for various sensorial attributes for their acceptance by using 9-point hedonic scale. The sensory scores obtained with respect to colour, flavour, taste and overall acceptability.

1) *Sample A:* Multinutritive Soya-Flaxseed snacks with (50:50) soya flour: flaxseed flour
2) *Sample B:* Multinutritive Soya-Flaxseed snacks with (70:30) soya flour: flaxseed flour
3) Sample C: Multinutritive Soya-Flaxseed snacks with (60:40) soya flour: flaxseed flour

Sample	Colour	Flavour	Texture	Taste	Over Acceptability
A	7.3	7.0	6.9	6.5	6.7
B	7.7	7.9	8	7.8	7.8
C	6.3	6.5	6.5	6.2	6

Table No. III Average Sensory score

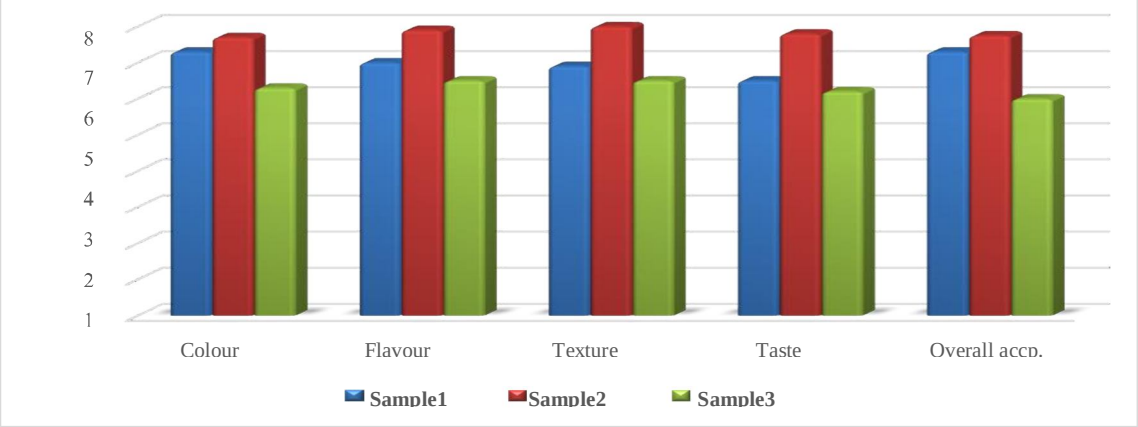

Fig.No.1 Average Sensory score

Sr.No.	Parameters	Values (% per 100 gm)
1.	Carbohydrates	43.3%
2.	Protein	26.24%
3.	Fats	14%
4.	Fibre	1.42%
5.	Ash	5%
6.	Energy	460 Kcal

Table No. IV Chemical analysis result

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VI. CONCLUSION

From the result, it was concluded that good quality of baked Multinutritive Soya-flaxseed snacks was prepared and from all the given treatment, S_2 was more acceptable.Potato, Corn flour and Rice flour was added to increase the nutritive value and flavour. According to sensory evaluation it was evaluated that sample (70:30) shows good acceptability. From the consumer feedback of Multinutritive soya-flaxseed snacks, we came to know that our product had good demand in market. Health benefits as well as nutritional significance for baked snacks was more than fried snacks. Omega-3 fatty acids instead of fish,only present in flaxseed which can be supplemented by utilizing flaxseeds in diet and 'soya flaxseed snacks' becomes ideal example of it.Protein rich soya flour along with flaxseeds, corn and rice flour becomes a good example of multinutritive diet,

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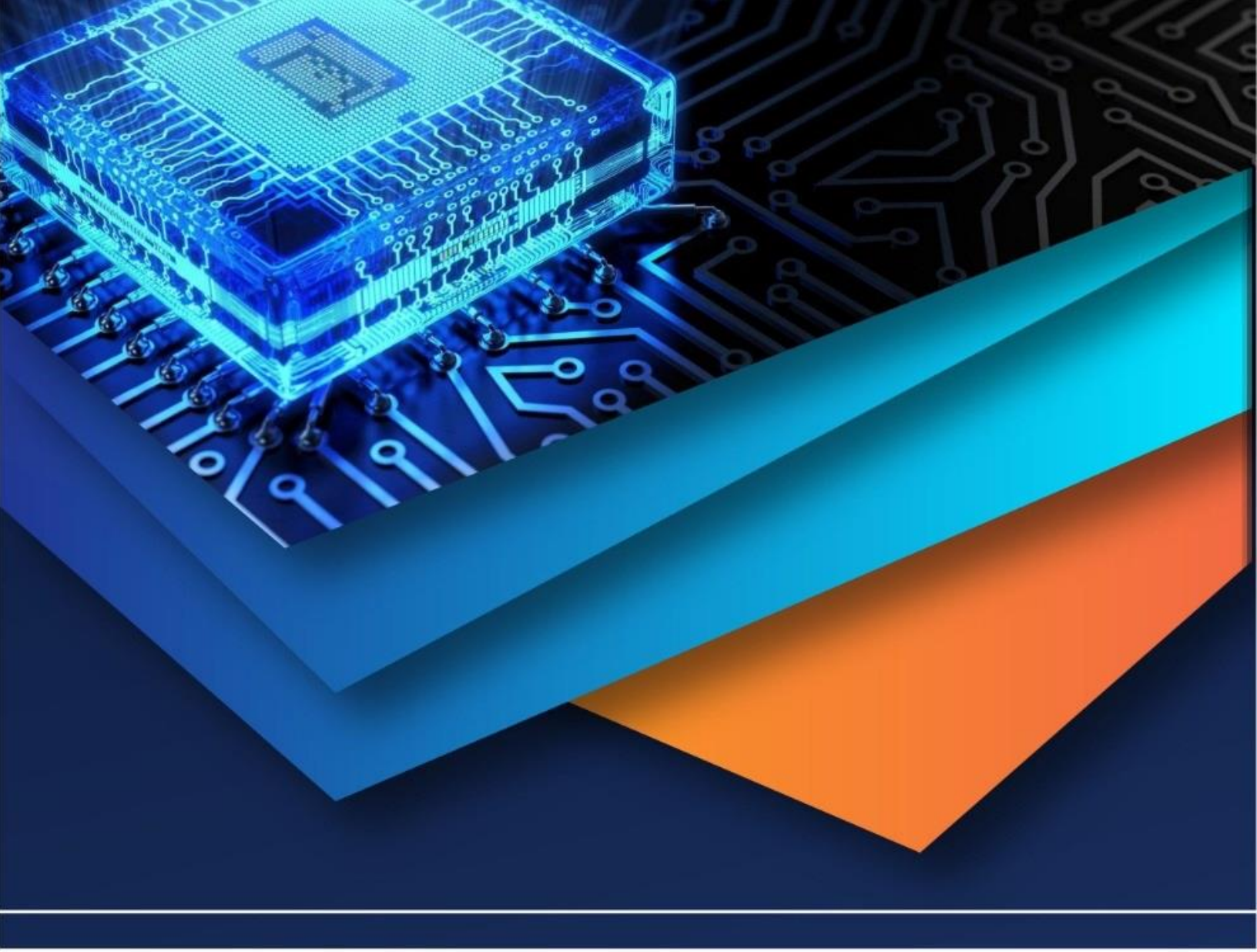

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