

# HERBAL FIBRE ENHANCED BREAD- A QUALITY ANALYSIS

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## ABSTRACT

*A quality food product was developed with the incorporation of flaxseed and horse gram in bread have higher amount of protein, fat, carbohydrate, fiber. When compared to the normal one it is an excellent source of protein, fat, carbohydrate, fiber. 15:20 ratio of Flax seed and Horsegram exhibited best results. Over all acceptability scores for incorporation of flaxseed and horse gram bread was high for the first 5 days than it is throughout the storage period decreased. The microbial load for incorporation of bread was below detectable level for the first 5 days then it is numbering microbial of colonies throughout the storage period. The production costs of incorporation of bread was cheaper than other processed product.*

**Key Words : Flax Seed- Horse Gram- Bread- High Fibre-Less Cost.**

## I INTRODUCTION

Bread is a staple food prepared from dough of flour and water, usually by baking. Throughout recorded history it has been popular around the world and is one of humanity's oldest foods, having been of importance since the dawn of agriculture. There are many combinations and proportions of types of flour and other ingredients, and also of different traditional recipes and modes of preparation of bread. As a result, there are wide varieties of types, shapes, sizes, and textures of breads in various regions. The components of flaxseed and horse gram, identified to exhibit the health are fiber, linens and linolenic acid (omega 3 fatty acid). Moreover flaxseed and horse gram is a good source of high quality protein, soluble fiber and phenolic compounds (Oomah 2001). Wheat is a staple food of India, about 70 percent of the total wheat is processed to produce the leavened bread. The incorporation of flaxseed and horse gram into diet can help to have a superior taste in regularly consumed breads. The reddish brown flaxseed and horse gram grains have a pleasant flavor and taste resembling nuts and its utilization is sample in different products Thus this

work was to standardize the bread to be prepared from horse gram and flaxseed along with its evaluation of the organoleptic characters of bread. Analysis of the nutrient composition of developed bread was done with the along with the microbial spoilage of developed bread during storage.

## II MATERIALS AND METHODS

The methodology followed for conducting the present study entitled “Development of high fiber bread with incorporation of horse gram and flaxseed” was discussed under the following heading.

### Selection of raw ingredients

Standardization of development of incorporation of flaxseed and horse gram bread

Sensory evaluation of developed bread

Nutrient analysis of the developed bread

Consumer acceptability of the developed bread

Shelf life analysis of the developed bread

Data analysis

## III STANDARDIZATION OF DEVELOPED BREAD

The bread was developed by using various proportions of the selected ingredients. The composition of the developed bread is given in the table.

### STANDARDIZATION OF DEVELOPED BREAD-TABLE

Table – I

Variation	Maida Gms	Horse gram Gms	Flax seed gms	Sugar gms	Hydrogena ted fat gms	Salt gms	Yeast gms	Milk powder gms	Vanilla powder gms
Standard	100	-	-	50	15	1.5	2.5	0.5	2.0
Sample1 HG:FS 10:10	100	10	10	50	15	1.5	2.5	0.5	2.0
Sample2	100	15	15	50	15	1.5	2.5	0.5	2.0

HG:FS 15:15									
Sample3 HG:FS 20:15	100	20	15	50	15	1.5	2.5	0.5	2.0
Sample4 HG:FS 25:15	100	25	15	50	15	1.5	2.5	0.5	2.0

Above table shows different breads were developed naturally sample1, sample2, sample3, and sample4 along with the standard bread. The various proportions of flaxseed and horse gram in the ratio of sample1-10: 10, sample2-15: 15, sample3-15:20 and sample4-15: 25, respectively. Finally the sample3 was excellent compare to other bread sample. This was done in order to enhance the taste and quality of the products.

#### IV ORGANOLEPTIC EVALUATION OF THE SELECTED PRODUCTS

Incorporation of bread was evaluated for their appearance, color, flavor, texture or consistency and overall acceptability with 5 point hedonic scale by using the scorecard and it was done by experienced panel members.

#### Nutrient analysis of the developed bread

From the 4 varieties of developed bread results scores, the sample-2&3 gained the highest acceptability from the panel member and it was subjected to nutrient analysis. Developed bread sample2&3 was analyzed for the nutrient by using the standard laboratory procedures. The nutrient analysis was carbohydrate, protein, fat, fiber, energy

#### V MICROBIAL EXAMINATION

All micro organisms require water to grow and the amount of moisture that permits growth varies with different kinds of microbes, the spores of fungi are known to grow readily in acidic as well as in high salt and high sugar environment (Tortora et al., 2002).

The deteriorative change in some foods is so rapid and these result in physiological, chemical, and biological changes in food rendering them for human consumptions (Gopinath. 2003).

#### Shelf life analysis of the developed bread

The developed bread sample1 and sample2 was highly accepted. It was packed in polyethylene pouch and sealed, as it was stored at room temperature. The microbial count like fungi, and bacteria were determined initial and final.

## **VI RESULT & DISCUSSION**

The result of the data collected on organoleptic evaluation and shelf life of development of high fiber bread incorporation of horse gram and flaxseed

## **VII NUTRITIONAL COMPOSITION OF THE INCORPORATION OF BREAD**

The nutrient like protein, fat, carbohydrate, fiber, of 15g flaxseed and horse gram were approximately calculated referring “the nutritive value of Indian food” by NIN.

### **NUTRITION COMPOSITION OF INCORPORATION OF BREAD (100G) COMPARED WITH CONTROL PRODUCTS**

**Table-1**

<b>S.NO</b>	<b>Sample food ingredients(gms)</b>	<b>Amount(gms)</b>	<b>Carbohydrate(g)</b>	<b>Protein(g)</b>	<b>Fat(g)</b>	<b>Fiber(mg)</b>
1	Maida	100	69.4	12.1	1.7	1.9
2	Sugar	50	49.7	0.05	-	-
3	Horse gram	20	11.4	4.4	0.1	1
4	Flaxseed	15	4.332	2.7435	6.324	4.095

Indicate the control value (VI)

**Table(1) –represents the appropriate nutritional composition of incorporation of bread.**

**STANDARDISATION OF INCORPORATION HG&FS BREAD**

**Table-2**

**ORGANOLEPTIC EVALUATION OF THE VARIOUS INCORPORATION OF BREAD**

<b>INCORPORATION RATIO</b>	<b>APPEARANCE</b>	<b>COLOUR</b>	<b>FLAVOR</b>	<b>TEXTURE</b>	<b>TASTE</b>	<b>MEAN SCORE VALUE OF OVERALL ACCEPTABILITY</b>
<b>Sample1 HG:FS 10:10</b>	<b>3.4</b>	<b>3.6</b>	<b>3.75</b>	<b>3.08</b>	<b>2.83</b>	<b>0.75</b>
<b>Sample2 HG:FS 15:15</b>	<b>4.41</b>	<b>3.6</b>	<b>4</b>	<b>3.58</b>	<b>3.83</b>	<b>0.882</b>
<b>Sample3 HG:FS 20:15</b>	<b>4.3</b>	<b>4</b>	<b>3.83</b>	<b>3.83</b>	<b>3.83</b>	<b>0.86</b>
<b>Sample4 HG:FS 25:15</b>	<b>3.91</b>	<b>3.83</b>	<b>3.91</b>	<b>3.66</b>	<b>3.83</b>	<b>0.782</b>

**\*HG-HORSE GRAM**

**\* FS-FLAXSEED**

The incorporation of horse gram and flaxseed in the ratio of 10:10, 15:15, 20:15, and 25:15 bread levels is respectively. From the above table represent the 0.86 percentage of bread means score is highest acceptability level compare to other percentage of incorporation of bread. From the highest means value 5 only used to carry out the study 20:15 percentage level of incorporation of bread.

**VIII ORGANOLEPTIC EVALUATION OF INCORPORATION OF BREAD DURING STORAGE**

Sensory quality is the combination of different sense of perception which plays an important role in choosing and eating a food appearance, flavor, and mouth feel the acceptance of food, srilakshmi (2003). Appearance can be judged by the eye, example color, size, shape, uniformity an absence of defect is the first importance in food selected, Mohini sethi (2001).

The score card obtained from the incorporation of bread discussed in the following table.

**ORGANOLEPTIC EVALUATION OF THE INCORPORATION OF BREAD DURING STORAGE**

**Table-3**

	Storage day					
	Sample1			Sample2		
Scores	1 <sup>th</sup>	15 <sup>th</sup>	30 <sup>th</sup>	1 <sup>th</sup>	15 <sup>th</sup>	30 <sup>th</sup>
Appearance	5	4	3.2	4.5	4	3.0
Color	5	4	3.2	4.5	4	3.0
Flavor	5	4	3.2	4.5	4	3.0
Texture	5	4	3.2	4.5	4	3.0
Taste	5	4	3.2	4.5	4	3.0

**APPEARANCE**

From the table it was understood food that the initial mean value for appearance of incorporation of bread stored in 225 guage polypropylene cover. It was 5 in 1<sup>st</sup>, 15<sup>st</sup>, 30<sup>st</sup>, day, and it was decreased during storage period.

**COLOR**

The initial mean value for color of incorporation of bread. It was 5 in 1<sup>th</sup>, 15<sup>th</sup>, 30<sup>th</sup>, and it was decreased during storage period.

**FLAVOUR**

The initial means value for flavor of incorporation of bread. It was 5 in 1<sup>th</sup>, 15<sup>th</sup>, 30<sup>th</sup>, day and it was decreased during storage period.

### TEXTURE

The initial mean value for texture of incorporation of bread. It was 5 in 1<sup>st</sup>, 15<sup>th</sup>, 30<sup>th</sup>, day and it was decreased during storage period.

### TASTE

The initial means value for taste of incorporation of bread. It was 5 in 1<sup>st</sup>, 15<sup>th</sup>, 30<sup>th</sup>, day and it was decreased during storage period.

### OVERALL ACCEPTABILITY

The initial mean value for overall acceptability of incorporation of bread was 5, and it was decreased to 90<sup>th</sup> day of storage.

Quality is the ultimate criterion of the desirability of any food product to the consumer. The above table reveals that all sample had high acceptability.

## IX MICROBIAL LOAD OF THE INCORPORATION OF BREAD DURING STORAGE

Table-4

### MICROBIAL LOAD OF THE BREAD

SAMPLE	BACTERIAL COUNT(10 <sup>-5</sup> CFU*/g)		FUNGAL COUNT(10 <sup>-5</sup> CFU*/g)	
Incorporation of horse gram and flaxseed	1 <sup>st</sup>	No growth	1 <sup>st</sup>	No growth
	15 <sup>th</sup>	29	15 <sup>th</sup>	26
	30 <sup>th</sup>	36	30 <sup>th</sup>	98

CFU-colony forming units

BDL-Below detectable level

Table and figure and figure represent the change in microbial load of incorporation of bread during storage period.

### BACTERIAL COUNT

Initial bacterial counts of incorporation of bread was BDL and it increased  $1 \times 10^{-5}/g$ ,  $2 \times 10^{-5}/g$ ,  $3 \times 10^{-5}/g$ ,  $4 \times 10^{-5}/g$ , during the 30<sup>th</sup>, 45<sup>th</sup>, 60<sup>th</sup>, 75<sup>th</sup>, 90<sup>th</sup> day of storage respectively.

## FUNGAL COUNT

Initial fungal count of incorporation of bread was BDL and it increased to  $1 \times 10^{-5}/g$ ,  $2 \times 10^{-5}/g$ ,  $3 \times 10^{-5}/g$ ,  $5 \times 10^{-5}/g$  during the 30<sup>th</sup>, 45<sup>th</sup>, 60<sup>th</sup>, 75<sup>th</sup>, 90<sup>th</sup> days of storage respectively.

## X SUMMARY

Development of value added products from incorporation of bread was presented along with valid conclusion drawn from the result of the study incorporation of bread was highly acceptable.

Incorporation of flaxseed and horse gram in bread have higher amount of protein, fat, carbohydrate, fiber, compare to the STD one it is an excellent source of protein, fat, carbohydrate, fiber.

Over all acceptability first scores for incorporation flaxseed and horse gram of bread was high for the 5 days than it is throughout the storage period decreased.

The microbial load for incorporation of bread was below detectable level for the first 5 days then it is numbering microbial of colonies throughout the storage period.

The production costs of incorporation of bread are cheaper than other processed product and processing does not involve any costly equipment and machineries, so it can be process at home level and can be marked by women entrepreneurs.

## XI RECOMENDATION

Flaxseed and horse gram should be included in daily diet plan through its incorporation into wheat flour used for production of bread. The formulation made with 15:20 ratio of flaxseed and horse gram flour, had good acceptability scores wSith an excellent source of dietary fiber and linolenic acid. Flaxseed and horse gram incorporated bread and other developed varieties should be advised for diabetic and heart patients with the potential health benefits helps to overcome life style diseases by an active ingredients of flaxseed and horse gram should be extracted and used a nutraceutical in different food products including chapattis and other traditional products.

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