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## SENSORY EVALUATION OF NUTRITIOUS HERBAL BREAD DEVELOPED BY INCORPORATION OF DILL LEAVES POWDER

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### ABSTRACT

*The Dill/ Soya leaf (Anethum graveolens) is one of the most useful medicinal plants of India. All parts of the plant (leaves and seeds) have medicinal virtues and have been used as medicine for a long time. The main aim of the study was to develop herbal bread by incorporation of dill leaves and evaluate the sensory as well as nutritional parameters of herbal bread. The basic recipe of bread was served as control (T<sub>0</sub>). Along with control; three treatments (T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>) were prepared by incorporating 2 g of dill leaves powder. The Prepared products were served to Panel of seven experienced members. They were tested for different sensory attributes (Taste and Flavour, Colour and Appearance, Consistency and Overall Acceptability) with the help of Nine Point Hedonic Scale (Srilakshmi, 2010). Nutritional analysis of Dill leaf was done (AOAC 2011) and all the nutrient of nutritious herbal bread was calculated from the values are given in foods and nutrition table (Gopalan 2011). Statistical analysis was done by applying two way classifications of analysis of variance techniques. The results shows that among all the treatments the average sensory score of T<sub>2</sub> (7.97) was highest followed by T<sub>3</sub> (7.75), T<sub>1</sub> (7.49) and T<sub>0</sub> (7.40). The calculated value of F (11.93) is more than the tabulated value of F (4.75) at 5% probability level which indicate that there is significant difference between the sensory acceptability of treatments. Carbohydrate content decreased with the increase in amount of Herbal Mix{T<sub>0</sub> (wheat flour 100%), T<sub>1</sub> (wheat flour + barley flour + cheak pea flour + wheat bran + garlic powder + dill*

leaf powder::59:10:25:3:2:2), T<sub>2</sub> (wheat flour + barley flour + cheak pea flour + wheat bran + garlic powder + dill leaf powder:: 63:15:15:3:2:2) had the highest score followed by T<sub>1</sub> (wheat flour + barley flour + cheak pea flour + wheat bran + garlic powder + dill leaf powder::59:10:25:3:2:2) and T<sub>3</sub> (wheat flour + barley flour + cheak pea flour + wheat bran + garlic powder + dill leaf powder::58:25:10:3:2:2)}. T<sub>1</sub> (41 g), T<sub>2</sub> (37 g) and T<sub>3</sub> (42 g) whereas the energy was found highest in T<sub>1</sub> (352.39 Kcal) followed by T<sub>2</sub> (319.54), T<sub>3</sub> (344.75) and T<sub>0</sub> (347.7). It was clearly shown in the table that protein (ranging from 10.96 – 12.84 g), fat (ranging from 1.29 -2.43 g), fibre (ranging from 2.88 - 4.76 mg), and Iron (ranging from 2.73-4.05 mg) more in treatments as compared to control T<sub>0</sub>. Thus it concluded that herbal bread developed by incorporating dill leaves powder have good sensory acceptability as well as nutritional value.

**Key Words-** CVD, CHD, Hypoglycaemic, Hypolipidemic, Blood Pressure, of Herbal Noodle, Medicinal Plants.

## 1. INTRODUCTION

The health benefits of soya leaf include its ability to boost digestive health, as well as provide relief from many disorders like insomnia, hiccups, diarrhoea, dysentery, menstrual disorders, respiratory disorders, and cancer. It is also good for oral care, and can be a powerful boost for your immune system and can protect you from bone degradation. It is also an anti-inflammatory substance, which protects against arthritis and reduces excess gas, and is considered a carminative.

Soya plant scientifically known as *Anethum graveolens*, has been used for culinary and medicinal purposes for hundreds of years. Both the seeds and the leaves can be used. Apart from giving a strong, tangy, appetizing flavour and taste, it also has many medicinal properties, which mainly come from certain compounds called Monoterpenes, as well as flavonoids, minerals and certain amino acids. The health benefits of soya leaf are derived from its organic compounds, vitamins, and minerals. These include powerful monoterpenes like limonene, carvone, and anethofuran, as well as flavonoids like vicenin and kaempferol. As for vitamins and minerals, dill has a significant amount of vitamin A and vitamin C, as well as trace amounts of folate, iron, and manganese. (Singh 2005)

Calcium content of soya leaf is an important element in protecting from bone loss and the loss of bone mineral density. Osteoporosis affects millions of people each year, and calcium,

along with other essential minerals, are work as a key component in the proper growth and development of bones, and the repair of injured bones as well. Monoterpenes are chemopreventive, and since they are stimulating by nature, they activate the secretion of an enzyme called glutathione-S-transferase (the radical glutathione is an effective antioxidant) which is very effective in neutralizing carcinogens. It is particularly effective at neutralizing Cyano- and Benzo- derivatives and free radicals, thereby protecting the body from cancer. The other antioxidants in the essential oils of dill also contribute to this cancer protection that people enjoy from adding dill to their diet.

Considering the nutritional as well as therapeutic aspects of dill leaves a study was design to develop herbal bread by utilizing dill leaves. The main objective of the study was to develop and evaluate the sensory as well as nutritional parameter of herbal bread.

## 2. MATERIALS AND METHODS

Basic ingredients for bread preparation were procured from the local market of Allahabad. Value added product *herbal bread* was developed by using dill leaves powder. Dill leaves are collected from local market, healthy leaves are selected and these leaves washed so that all unwanted materials such as dust and insects are removed after that the leaves were blanched and then dried in hot air oven at 60° C till the leaves are completely dried, then these dried leaves are grind to obtain powder as shown below in flow chart.



**Flowchart showing Development of dill leaves powder**

**Source:** *Mishra et.al. 2012*

**Dried leaves are analysed to obtain the nutritive values (AOAC 2011).** The basic recipe was served as control ( $T_0$ ). Along with control; three treatments were prepared by incorporating Wheat bran, garlic powder and dill leaves powder with different proportion of wheat, chickpea and barley flour referred as  $T_1$ ,  $T_2$  and  $T_3$  respectively { $T_1$ (wheat flour + barley flour + chick pea flour + wheat bran + garlic powder + dill leaf powder::59:10:25:3:2:2),  $T_2$ (wheat flour + barley flour + chick pea flour + wheat bran + garlic powder + dill leaf powder:: 63:15:15:3:2:2),  $T_3$ (wheat flour + barley flour + chick pea flour + wheat bran + garlic powder + dill leaf powder::58:25:10:3:2:2)}. Prepared products were freshly served to taste panel of five experienced members. Panel members were rated the product with the help of nine points hedonic scale card (**Srilakshmi, 2010**). Nutritional composition of *nutritious herbal bread* was calculated by using the standard procedure described by **Gopalan 2011**. Statistical analysis was done by applying two way classification analysis of variance techniques (**Fisher, 1995**).

### 3. RESULTS AND DISCUSSION

The data illustrated in the Table 1 shows the average sensory scores for different parameters in control and treated sample of *herbal breads*, clearly indicates that treatments  $T_2$  (8.10) had the highest score followed by  $T_1$  (7.54) ,  $T_3$  (7.67), and  $T_0$ (7.44) for colour and appearance . The calculated value of F is greater than the tabulated value of F at 5% probability level. Therefore the significant difference was found between treatments regarding the colour and appearance of *herbal bread*. The average sensory scores for body and texture of *herbal bread*, shows that treatments  $T_2$  (7.76) had the highest score followed by  $T_1$  (7.51),  $T_3$  (7.48) and  $T_0$  (7.30) which indicates that an increase in the amount of wheat flour and having equal proportion of barley and chickpea flour along with Dill leaves powder. The calculated value of F is greater than the tabulated value of F at 5% probability level. Therefore, it can be concluded that there was significant difference between treatments regarding the body and texture of *herbal bread*. Similarly in case of taste and flavour of *herbal bread*, the average sensory scores of  $T_2$  (7.76) had the highest score followed by  $T_3$  (7.44),  $T_1$  (7.40) and  $T_0$  (7.33). The calculated value of F is greater than the tabulated value at 5% probability level. Therefore, it can be concluded that there was significant difference between treatments regarding the taste and flavour of *herbal bread*. The average sensory scores for overall acceptability of *herbal bread*, indicates that treatments  $T_2$  (7.97) had the highest score followed by  $T_1$  (7.49),  $T_3$  (7.75) and  $T_0$  (7.40). The calculated value of F is less than the tabulated value at 5% probability level.

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The table 2 shows the nutritive value of herbal bread of different treatments i.e. control (T<sub>0</sub>) without incorporation of Dill leaves powder and with incorporation of 3g of wheat bran, 2g of garlic powder and 2 g of Dill leaves powder in each treatment along with different ratio of chickpea, barley and wheat flour referred as T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> respectively. Result revealed that the Carbohydrate content also decreased with the increase in amount of Herbal Mix. T<sub>1</sub> (41 g), T<sub>2</sub> (37 g) and T<sub>3</sub> (42 g) whereas the energy was found highest in T<sub>1</sub> (352.39 Kcal) followed by T<sub>2</sub> (319.54), T<sub>3</sub> (344.75) and T<sub>0</sub> (347.7). It was clearly shown in the table that protein (ranging from 10.96 – 12.84 g), fat (ranging from 1.29 -2.43 g), fibre (ranging from 2.88 - 4.76 mg), and Iron (ranging from 2.73-4.05 mg) more in treatments as compared to control T<sub>0</sub>.

#### 4. CONCLUSION

Therefore, it is concluded that Dill leaves can be successfully incorporated in the development of *nutritious herbal bread* which have good sensory acceptability. Dill leaves are rich source of dietary fibre, minerals and vitamins. This research will provide a new arena in the area of medical science/ health science for the development of therapeutic approach for the management of life style disorder such as diabetes, Cardio Vascular Disease and Chronory Heart Disease by simultaneous administration of poly-herbal formulation.

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## APPENDIX

### TABLES

**Table 3: Effect of incorporation of Dill leaves powder on organoleptic characteristic Bread**

Sensory Attributes	Colour and Appearance	Body and Texture	Taste and Flavor	Overall Acceptability
T <sub>0</sub>	7.44	7.30	7.33	7.40
T <sub>1</sub>	7.54	7.51	7.40	7.49
T <sub>2</sub>	8.10	7.76	7.76	7.97
T <sub>3</sub>	7.67	7.48	7.44	7.75
F <sub>cal</sub> (5%)				

\*Significant at 5% probability level

**Table 1. Chemical analysis of Dill leaves powder per 100 gm.**

NUTRIENTS	CHEMICAL VALUE PER 100g
Moisture(g)	7.30
Ash(g)	12.56
Carbohydrate(g)	55.82
Protein(g)	19.96
Fat (g)	4.36
Fibre(g)	13.6
Iron(mg)	48.78

**Table 2. Nutritional composition of Herbal bread per 100g**

NUTRIENTS	TREATMENTS			
	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
ENERGY(Kcal)	347.7	352.39	319.54	344.75
PROTEIN(g)	11.0	12.84	10.96	11.81
FAT(g)	0.9	2.43	1.29	1.79

<b>CARBOHYDRATE(g)</b>	73.9	69.79	66.27	70.35
<b>FIBRE(g)</b>	0.3	2.879	4.76	2.89
<b>IRON(mg)</b>	2.7	4.05	2.73	3.59