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RESEARCH ARTICLE

SENSORY AND NUTRIENT ANALYSIS OF OATS BISCUITS ENRICHED WITH NUTS

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ABSTRACT

Nuts are nutrient-dense supplying a wide range of essential amino acids, MUFA and PUFA. Oats contains a good source of proteins, fibre and minerals. The amount of oats used for human consumption has increased progressively, the fact health effects of oats benefit mainly on the total dietary fibre and B- glucan content a cholesterol-lowering chemical. Commercially available biscuits are mostly deficient in ALA and dietary fibre. Refined ingredient usage makes biscuits deprive of grain components that are protective of health. Hence under the light of present information, an innovative oats and nut biscuits were prepared using refined wheat flour, butter, and sugar along with three variations containing oats (15g) and nuts (5g,10g and 15g). The product was standardized and subjected to sensory evaluation and variation II and III was accepted by the majority of the panellist. Statistical analysis was done using a t-test, the results found to be insignificant in comparison to the basic with the variation I, variation II and variation III. The biscuits were also subjected to nutrient analysis to analyse protein, fat and fibre. Standardized methods were used for nutrient analysis. The nutrient analysis showed an increase in protein and fibre content of the oats biscuits enriched with nuts. The product developed contains good amounts of nutrients which help in meeting nutritional requirements of all age groups. (KeyWords: B-Glucan- Cholesterol-lowering, MUFA, PUFA and ALA).

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INTRODUCTION

Oats (AvenaSativa L.) contains good source of proteins, fibre and minerals. The amount of oats used for human consumption has increased progressively, the fact health effects of oats benefits mainly on the total dietary fibre and B- glucancontent. Oats is reported as, they used for their antioxidants, anti-inflammatory, moisturizing and even ultraviolet protecting properties. As a grain without gluten, oat flour and bran are used as an alternative food for persons suffering celiac disease. As a health food oats have received extensive attention in recent times for their ability to lower serum cholesterol level. Nuts are great for the health and are a nutritious addition to a healthy diet. There are a handful of varieties of nuts, including almonds, walnuts, macadamia nuts, peanuts, Brazil nuts, hazelnuts, pistachio nuts, chestnuts and more. though the varieties do differ in nutrient composition, They are all good sources of monounsaturated fat, protein, fibre, vitamins, minerals and phytochemicals considered to be beneficial for heart disease prevention, cholesterol lowering, cancer prevention, and an adjust to weight loss.

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Current research has consistently confirmed that nuts don't deserve the bad rap on health, and in fact nuts should be hailed as a health food. Nuts are full of healthy fats, protein, fibre, and all kinds of wonderful vitamins, minerals, and phytochemicals that in moderation are great for the health. As a replacement for other fatty and unhealthy foods and snacks, good quality, minimally processed nuts are definitely an excellent whole food source of nutrition. Almonds are incredibly dense package of nutrients. They are good source of mono-unsaturated fatty acids which reduce the risk of heart disease by reducing LDL cholesterol. Regular consumption of almonds help in the development of brain increases the level of high density lipoprotein (HDL) and reduce the level of low density lipoprotein (LDL), there by effectively controlling cholesterol levels. Mono-saturated fat, protein, magnesium and potassium contained in almonds are good for the heart and regulate blood pressure. Vitamin E acts as an antioxidant and reduces the risk of heart diseases. It also helps in reducing blood glucose levels and reduces the incidence of birth defects. Walnuts are one of the best plant sources of protein. Walnuts are rich in fat a diet supplemented with walnuts had a beneficial effect on blood lipids and lowering blood cholesterol. Walnuts contain about 10% alpha linoleic acid which has been associated with reduced risk of anti-thrombotic and anti-arrhythmic effects.

MATERIALS AND METHODS

In light of the health benefits of nuts and oats nutritious biscuits were prepared using oats and nuts-Almonds and Walnuts to improve the nutritional contents.

PRODUCT DEVELOPMENT

Product development in nutritional content means the act of developing a basic product into a new or value added product, which is high in terms of nutrients and other health benefits. Because of the quality and sometimes almost mystical reputation and characteristics of most primary products, their addition to other products usually enhances the nutritive value or quality of these secondary products. For this reason, the secondary products are referred to here as value added products or developed products.

Method of preparation

- **Step:** 1 Beat butter and sugar thoroughly till soft, and then add essence to it and mix.
- **Step:** 2 To this add refined wheat flour, baking powder and water if required.
- **Step:** 3 Mixed the contents properly and make soft dough.
- **Step:** 4 Using a wooden rolling pin, the dough was sheeted to a uniform thickness.
- **Step:** 5 The sheeted dough was baked at 180^{o}c pre-heated oven for 15 minutes.

STANDARDIZATION

The standardization is the process where a recipe is tested a number of times and found consistently satisfactory in quality and yield. It is gradual trial and error process the use of

Table 1. Quantity of ingredients used in preparation of basic and variations

Ingredients	Basic	Variation I	Variation II	Variation III
Refined wheat flour	20 g	20 g	20 g	20 g
Sugar	28 g	28g	28 g	28 g
Butter	20 g	20 g	20 g	20 g
Oats	15 g	15 g	15 g	15 g
Almonds	-	2.5 g	5 g	7.5 g
Walnuts	-	2.5 g	5 g	7.5 g
Baking powder	2g	2 g	2 g	2g
Vanilla essence	2 drops	2 drops	2 drops	2 drops
Tutti fruity	15 g	10 g	5 g	-

Table 2. Nutritive value of basic and variations of oats biscuits

Oats biscuits	Energy (kcal)	Protein (gm)	Fat (gm)	Carbohydrate (gm)	Fibre (gm)	Iron (mg)	Calcium (mg)
Basic	381	4.42	17.6	68	1.6	1.24	68
Variation I	415	5.33	20.6	68.5	1.7	1.42	76.2
Variation II	449	4.51	23.7	68.7	1.8	1.62	84.5
Variation III	482	7.51	26.8	69.6	1.9	1.62	92.7

Table 3. Mean value of the sensory attributes of oats biscuits (basic and variations)

Sensory attributes	Basic	Variation I	Variation II	Variation III
Appearance	3.9	3.1	4.2	4.6
Flavour	3.5	3.8	4.4	4.8
Taste	4.1	3.2	4.6	4.7
Texture	3.8	3.9	4.2	4.6
Acceptability	3.5	3.5	4.4	4.2

Table 4. Nutrient analysis of protein, fat, fiber (basic and variations) of oats biscuits

S.no	Oats and nuts biscuits	Protein (gm)	Fat (gm)	Fiber (gm)
1	Basic	2.12	11.50	0.61
2	Variation-II	3.23	17.70	1.42
3	Variation-III	4.81	20.60	1.63

Table 5. 'T'- Test for variation III In Comparision with basic

S.No	Sensory Attributes	Mean Value of Basic	Mean value of Variation III	"T" Value	Result
1.	Appearance	3.9	4.6	0.00135	insignificant
2.	Flavour	3.5	4.8		
3.	Texture	4.1	4.7		
4.	Taste	3.8	4.6		
5.	Acceptability	3.5	4.2		

Note: critical value of 'T' at p at 0.05is 2.13

Table 6. 'T'- Test for variation II In comparision with basic

S.No	Sensory Attributes	Mean Value of Basic	Mean Value of Variation II	"T" Value	Result
1.	Appearance	3.9	4.2		
2.	Flavour	3.5	4.4		
3.	Texture	4.1	4.6	0.0045	insignificant
4.	Taste	3.8	4.2		
5.	Acceptability	3.5	4.4		

Note: critical value of 'T' at p at 0.05is 2.13

Table 7. 'T'- Test for variation III In Comparision with basic

S.No	Sensory Attributes	Mean Value of Basic	Mean Value of Variation III	"T" Value	Result
1.	Appearance	3.9	4.6	0.00135	insignificant
2.	Flavour	3.5	4.8		
3.	Texture	4.1	4.7		
4.	Taste	3.8	4.6		
5.	Acceptability	3.5	4.2		

Note: critical value of 'T' at p at 0.05is 2.13

standard recipe is a prime factor in producing good product. The basic recipe is prepared as per method of preparation of biscuits. The variations are standardize depending upon the quantities required of ingredients like refined wheat flour, oats and nuts are included keeping in view the desired effects on the foods. The total quantity is taken as 100gms.Sensory evaluation of biscuits was carried out by using hedonic rating scale.20 panellists were selected for the trials of evaluation of the sensory attributes of the biscuits prepared. The panellists in each trial did sensory evaluation of the Basic and variations. Same procedure, temperatures and baking time were followed for the three trials as to minimize any kind of a change in the preparation that might bring about differences in taste, texture, and odour. Four samples were placed together in front of each member with a score card to rate four different biscuits.

Nutrient Analysis: Proximate composition of biscuits were carried out by method given by AOAC (1990).

Statistical analysis: The data collected from the sensory evaluation was compiled. "T" test was applied to find out the significant difference between the mean scored for the sensory properties of the basic and variations.

Summary and Conclusion

Biscuits are the most popular and versatile snack foods and are widely consumed to satisfy the occasional "prangs" of hunger. So this study was one effort in the direction of producing a healthy and nutritious recipe for all age groups. The basic along with three variations were prepared. Same method of preparation was followed for both the basic and variations along with refined wheat flour, oats, nuts, sugar and butter. All the variations were formulated and standardized by conducting repeated trials. Panel of 20 judges evaluated the palatability of the product. The palatability of the basic and variations were accepted in terms of appearance, flavour, texture, taste and acceptability. Statistical analysis of the palatability trials has shown that "t" value at 2.132 was found to be insignificant for variation I, variation II, and Variation III i.e.0.1752, O.O045and 0.00135 respectively. Variation II and variation III were accepted by majority of the panellists. The products were subjected to nutrient analysis. In variations the amount of Protein, fat and fibre was increased.

From the finding of the present investigation it can be concluded that the biscuits developed using oats and nuts contains appreciable amount of nutrients.

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