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Formulation of High Protein Cookies Fortified with Green gram

Pragya Mishra[1], Suman Devi[1*], Seema Sonkar[1], Shatrughan Singh[1], H.G. Prakash[1]

[1]Department of Food and Nutrition, College of Home Science, under CAAST-NC Project C.S.A. University of Agriculture and Technology, Kanpur

Abstract

Cookies are popular snacks widely consume all over the world by all age group people. The major attraction of cookies is that it is produced in wide variety. Green gram is also rich in vitamin A, B1, B2 and Niacin, Vitamin C, calcium, phosphorous. Our study was focused on utilization of green gram in cookies could avail the consumers a protein rich food products. Refined wheat flour, Green Gram flour, sugar, olive oil, baking powder were used for prepared the Green gram flour was produced and make a different ratio 50 percent C_1 and 75 C_2 percent green gram flour mixed with wheat flour. The ratio of C_1 is more acceptable than C_2 on the basis of sensory evaluation. It can be concluded that Green Gram bean cookies is good option for supplementation of protein.

Keywords: Cookies, Green gram, malnutrition, Sensory evaluation

Introduction

Pulses hold an important place in human nutrition on account of their rich nutritional contribution to diets, particularly for proteins, essential minerals and vitamins, and dietary fibre. They also form a staple part of diets along with cereals as an essential accompaniment. They are of significance in South East Asian dietaries where people are vegetarians or do not have an access to animal sources of proteins due to economic reasons (Egounlety and Aworh 2003). The mung bean (*Vigna radiata*), alternatively known as the green gram, maash, or moon, *mudga*), is a plant species in the legume family. The mung bean is mainly cultivated in East Asia, Southeast Asia and the Indian subcontinent. It is used as an ingredient in both savory and sweet dishes. Whole cooked mung beans are generally prepared from dried beans by boiling until they are soft. Mung beans are light yellow in colour when their skins are removed. Mung bean paste can be made by dehulling, cooking, and pulverizing the beans to a dry paste here are many approaches to tackle malnutrition, one of them is to supplement the missing nutrients through foods. Food fortification has been recognized as an effective strategy to overcome micronutrient malnutrition, especially in developing countries. Fortification of wheat flour with iron, folic acid and other micronutrients in countries where wheat is used as a staple, has been recommended as a strategy to prevent, control and overcome anemia by WHO

and it can be integrated with other strategies over time (WHO and UNICEF 2004; WHO, FAO, UNICEF, GAIN, MI, FFI 2009).

Material and Methods

The present study was carried out in the Department of Food Science and Nutrition. Selection of the green gram, wheat flour, olive oil and sugar from Chander Shaker Azad University of Agriculture and Technology, Kanpur (U.P.), India.

Preparation of green gram flour and wheat flour

Wheat flour and green gram flour was purchased from the local market and sugar was also purchased from the local market and cleaned, washed, dried for 5 hour and after drying, grind the green gram by mixer, sieved then making powder and Selection of wheat flour without impurities and dust particles then sieve to get fine powder packed in air tight container.

Development of green gram cookies

First of all produced a green gram flour, green gram has roasted with medium flame at 15 minutes, cool it room temperature and grind, and 20 mesh sieve. The cookies were prepared with the incorporation of green gram flour in 50, and 75 percent with wheat flour and amount of sugar, fat, baking powder and baking soda kept constant to 70, 50, 5 gm and 2.5 g, respectively on 100 g flour basis. Firstly all the ingredients e.g. all refined wheat flour, green gram dhal flour, baking powder, fat, and sugar were weighed. Powdered sugar was added into fat mixed properly; this process is known as creaming. The mixture was made a soft dough, make round shape and garnish with cashew and almond. Bake it Pre heated oven at 250^0 C at 20 minutes.

Green Gram Bean
↓
Cleaning
↓
Steeping overnight
↓
Roasting at 15 minutes
↓
Grinding
↓
Cool at room temperature
↓
Sieving (20 mesh sieve)
↓
Green Gram Flour

Result and Discussion

Sensory quality like colour, flavour, texture, taste and overall acceptability of cookies was evaluated by semi-skilled panel by using 9 point hedonic. The data was statistically analysed. The product cookies was evaluated by 5 panel member's according to the flavour, texture, taste, colour and over all appearance on the basic of Hedonic rating scale. The results obtained from the present investigation as well as relevant discussion have been summarized under

following heads: Sensory evaluation The average score obtained for different parameter of sensory evaluation was analysed, tabulated and presented in table 1.

Appearance Table 1. On the basis of appearance the score revealed that C1 is rated as 'like very much'. C1 (7.5) got comparatively high scores than the control products. So, it has been shows that control product are not best due to its low score than other two treatments.

Taste Table 1. The above table show that fortified sample were significant at the level of 5 per cent in critical difference. On the basis of taste the score (7.0) revealed that C1 is rated as 'like very much'. In the comparison with control products. During the work, it was found that, cowpea flour were helpful in increasing nutritional properties of the products.

Flavour Table 1. Shows that mean score of C1 sample was 7.7 in the flavour, while the mean value of C2 (75:25), fortified of cookies were 7.3 respectively. The above table show that fortified sample were significant at the level of 5 per cent in critical difference. On the basis of flavour the score revealed that C1 is rated as 'like much' in the comparison with control products.

Texture Table 1 shows that mean score of C1 sample was 8.0 in the texture, while the mean value of C2 and control is fortified of cookies were 7.0 and 4.0 respectively. The above table show that control and fortified sample were significant difference. On the basis of texture the score revealed that C1 is rated as 'like very much' in the comparison with control products.

Colour Table 1 shows that mean score of control sample was 4.0 in the colour, while the mean value of C1 (50:50) and C2 (75:25), fortified of cookies were 7.0, 6.7, respectively. The above table show that control and fortified sample were significant. On the basis of appearance the score revealed that C1 is rated as 'like very much' in the comparison with control products

Overall acceptability Table 1 shows that mean score of control sample was 4.5 in the overall acceptability, while the mean value of C1 (50:50) and C2 (75:25), fortified of cookies were 7.8, 6.1, respectively. The table shows that fortified sample were significant. On the basis of overall acceptability the score revealed that C1 is rated as 'like very much'. In the comparison with control products.

Table 1: Mean score of overall characteristics of sensory evaluation in cookies with wheat Flour: Green gram flour, (9 point Hedonic Rating Scale).

Attributes	Treatments		
	RWF (Control)	C1 (GGF : RWF) (50:50)	C2 (GGF : RWF) (75:25)
Appearance	3	7.5	7.0
Taste	5	7.0	5.0
Flavour	4.5	7.7	7.3
Texture	4	8.0	7.0
Colour	4	7.0	6.5
Over all Acceptability	4.5	7.8	6.1
Mean (SD)	0.68313	0.419524	0.842417

Note: GGF: RWF (50:50) = Green gram flour: Refined wheat Flour
GGF: RWF (75:25) = Green gram flour: Refined wheat Flour

Conclusion

Cookies are the snacks with tea popular all over the world. Cookies were good nutritive value viz good source of protein, fat and calcium, vitamins. The results showed that of Green Gram cookies on the basis of sensory attributes revealed that green gram cookies containing 25 % GGF have highest score for overall acceptability than 50 % GGF levels. The main goal of this study works on the increasing nutritive value of Green Gram cookies by fortification or enrichment in future.

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References

1. Brief Introduction of Mung Bean. Vigna Radiata Extract Green Mung Bean Extract Powder Phaseolus aureus Roxb Vigna radiata L R Wilczek. MDidea-Extracts Professional. P054. http://www.mdidea.com/products/proper/proper05402.html Archived 2018-06-12 at the Wayback Machine
2. Egounlety M, Aworh OC. Effect of soaking, dehulling, cooking and fermentation with Rhizopus oligosporus on the oligosaccharides, trypsin inhibitor, phytic acid and tannins of soybean (Glycine max Merr.), cowpea (*Vigna unguiculata* L. *Walp*) and groundbean (*Macrotyloma geocarpa Harms*) J Food Eng. 2003;56:249–254. doi: 10.1016/S0260-8774(02)00262-5.
3. Snedecor, G.W. and Cochran, W.G. (1987). 'Statistical Methods', Oxford and IBH Publishing Co. 66, Janpath, New Delhi-1.
4. WHO. Annex 9. World Health report. Geneva: World Health Organization; 2002. [Google Scholar]
5. WHO, FAO, UNICEF, GAIN, MI, FFI (2009) Recommendations on wheat and maize flour fortification. Meeting Report: Interim Consensus Statement. World Health Organization, Geneva. (http://www.who.int/nutrition/publications/micronutrients/wheat_maize_fort.pdf. Accessed 6 Feb 2016
6. WHO. UNICEF . Focusing on anaemia. Towards an integrated approach for effective anaemia control. Geneva: World Health Organization; 2004