



The Effect Of Adding Dried Sohiong (*Prunus Nepalensis*) On The Nutrient Content Of Snack Bar.

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Sohiong fruit is a fruit that is abundantly found in Meghalaya, its tree bears fruit during the month of August-October. Since sohiong fruit has a high nutrition profile, this study aims to study the effect of adding dried sohiong fruit on the nutritional quality of the snack bar and to develop a nutritious snack bar. The snack bar was developed in 4 different variations namely variation 1, variation 2, variation 3, and variation 4. The dried fruit was added to Variation 2, variation 3, and Variation 4 in quantities of 5 gms, 7.5 gms, and 10 gms. A significant difference was observed in all the variations, the energy value of the snack bar was found to reduce as the fruit content increased and was found to be 420 kcal per 100 gms found in Variation 1, 410 kcal per 100 gms for Variation 2, 408 kcal per 100 gms for variation 3 and 400 kcal per 100 gms for variation 4. The fiber content was found to be 0.77 gms, 0.81 gms, 0.84 gms, and 0.86 gms per 100 gms of the samples. The protein content was 8.5 gms, 8.7 gms, 8.9 gms, and 8.5 gms per 100 gms of the sample. The vitamin A content was found to be 35 mcg, 40 mcg, and 45 mcg in Variation 2, variation 3, and Variation 4, whereas in Variation 1 where the fruit was not added Vitamin A was found to be only 3 mcg. The vitamin C content was also seen to be 16 mg, 18 mg, and 21 mg in Variation 2, variation 3, and Variation 4, whereas in Variation 1 the Vitamin C content was found to be 1.2 mg. In conclusion, it is seen that there is a significant difference when fruit was added to the three variations, the presence of fruit in the snack bar has improved the nutritional quality of the snack bar.

Keywords: Snack bar, dried sohiong fruit (*Prunus nepalensis*).

I. INTRODUCTION

II. Sohiong (*Prunus nepalensis* L.) is an exotic and indigenous wild fruit from the Rosaceae family. This fruit is commonly grown in the Khasi and Jaintia Hills of Meghalaya, India. It is a cherry-like dark purple fruit with distinct organoleptic features (color, odor, and flavor) and is a rich source of total phenols, vitamin C, flavonols, and anthocyanin content (Agrahar-Murugkar, & Subbulakshmi, 2005). The large fruit size type had higher values for physic-chemical characteristics, except for pulp recovery (74.71%), pulp to stone ratio (2.95), dry recovery (34.72%), TSS (20.15%), β -carotene (2.76 mg/100g), anthocyanin (358.86 mg/100g), and fibre (2.5%) (Rymbai, et al, 2016).

III. A healthy diet is necessary for an individual's body to function properly, but owing to various situations, people frequently avoid taking key nutrients and instead choose for junk food or bagged chips, etc. It is also because the market options for purchasing nutritious bars and food are quite restricted, and most of the conveniently available food products and the healthiest food are prohibitively expensive and difficult to obtain (Joshi, Mudita, & Singh, 2022). Overweight increases are mostly attributable to very quick changes in the food system, particularly the availability of cheap ultra-processed foods and beverages in low- and middle-income nations. As a large portion of the world's population's daily routine changes, the demand for ready-to-eat convenience products has been increasing (Popkin, Corvalan, and Grummer-Strawn, 2020).

IV. Granola is a nutritious snack item that can be prepared with a variety of ingredients. additives may include cereal grains, rolled or flaked oats and barley, cereal germ, honey, almonds, raisins, and other additives. The product is baked or boiled, with the mixture constantly stirred to preserve a loss consistency. Granola is pressed into a bar shape for easy consumption. Changing the components can alter the nutritional value of granola. Making granola bars from cereal grains is a prevalent practice around the world (Ahmad, et al, 2017).

I. RESEARCH METHODOLOGY

The ingredients that were used for developing the product are red rice flakes, ragi flour, pumpkin seed, dried sohiong fruit and jaggery. The snack bar was made in 4 different variations, Variation 1 (VAR 1), Variation 2 (VAR 2), Variation 3 (VAR 3), and variation 4 (VAR 4). After the snack bars were developed, they were subjected to sensory analysis followed by nutritional composition analysis to find out the effectiveness of adding fruit to the snack bar.

Snack bar Preparation

The ingredients used for the snack bar are red rice flakes puff, ragi flour, pumpkin seed, dried sohiong and jaggery. The snack bars were made in four different variations, in each variation the amount of sohiong was increased whereas the amount of other ingredients remained constant. The dry ingredients were weight separately, in a kadhai, 100 gms of jaggery was melted and boiled until a hard-boiled stage has reached. The dry ingredients were immediately added to the jaggery and mixed well. The mixture was then transferred to a tray and left to cool, the snack bars were cut into pieces. The details are depicted in the table 1 below:

Table 1
Ingredients and amounts of the different variations

Ingredients	Variation 1	Variation 2	Variation 3	Variation 4
Red rice flakes	30	30	30	30
Pumpkin seed	15	15	15	15
Ragi Flour	10	10	10	10
Dried sohiong	-	5	7.5	10
Jaggery	100	100	100	100

Chemical Analysis

The nutritional composition of the snack bar was determined, as per the guidelines given by AOAC 2000. For proximate analysis, energy, fat, protein, fibre, moisture and ash were estimated and for nutrient analysis Vitamin A, Vitamin C, Iron and calcium were estimated.

Sensory Analysis

For analysing the organoleptic properties of the snack bar, a 9-point hedonic scale was used followed by reporting the mean and standard deviation of the products. The sensory analysis was conducted among 12 trained panelists where each panel member was given snack bars or analysing their organoleptic attributes such as appearance, taste, texture, colour, aroma and overall acceptability and the grading was like extremely- 9, like very much- 8, like moderately-7, like slightly-6, neither like nor dislike-5, dislike slightly-4, dislike moderately-3, dislike very much-2, dislike extremely-1. The panel members were asked to read the instructions carefully.

IV. RESULTS AND DISCUSSION

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Proximate analysis and nutrient analysis

After the nutritional analysis of the snack bars was done it was found that there is a significant difference on all the parameters of the snack bars. The energy values of the snack bar were found to decrease on snack bars where sohiong fruit was added and was observed that the lowest energy value of 400 kcal/ 100 gm was observed in Variation 3 as compared to the first variation where the energy value was 420 kcal/ 100 gm. The fat content ranged from 7.6-9.6gms per 100 gms of sample. The carbohydrate content was found to be 73.1 gms -75.2 gms/ 100 gms. The dietary fibre was highest in variation 4 at 0.86 gm/100 gms. Protein content ranged from 8.5- 8.9 gms/ 100 gms where Variation 3 had the highest protein content of 8.9gms/100 gms. The moisture content was found to be lowest in Variation 1 with 4.8%, the moisture range was 4.8%- 7.8%. The ash content ranged from 1.7%-2.1% per 100gm of sample. There was an increase of vitamin A in the snack bars where Variation 1 without the fruit contained 3.0mcg of vitamin A whereas Variation 2, Variation 3 and variation 4 had a vitamin A content of 35 mcg, 40 mcg and 45 mcg per 100

gms respectively. With respect to Vitamin C content Variation 1 contained 1.2 mg/ 100gms, whereas variation 2, variation 3 and variation 4 contained 16mg, 18mg and 21mg of vitamin C respectively. The mineral content of the snack bar specifically iron was found to be 1.1 mg, 3mg, 3.7 mg and 3.8 mg in variation 1, variation 2, variation 3 and variation 4 respectively. The calcium content was highest in variation 4 with a content of 65mg/ 100 gms.

Table 2
Nutritional composition of the snack bars

Sl no.	Nutrient	Variation 1	Variation 2	Variation 3	Variation 4
Proximate Analysis					
1.	Energy (Kcal)	420	410	408	400
2.	Fats (gm)	9.6	8.2	9	7.6
3.	Carbohydrates (gm)	75	75.2	73.1	74.4
4.	Dietary fibre (gm)	0.77	0.81	0.84	0.86
5.	Protein (gm)	8.5	8.7	8.9	8.5
6.	Moisture (%)	4.8	5.7	7.4	7.8
7.	Ash (%)	1.7	1.8	2.0	2.1
Vitamin analysis					
8.	Vitamin A(mcg)	3.0	35	40	45
9.	Vitamin C (mg)	1.2	16	18	21
Mineral Analysis					
10.	Iron (mg)	1.1	3	3.7	3.8
11.	Calcium (mg)	34	58	62	65

After the analysis of the nutritional composition of the snack bar it is observed that addition of fruit to the snack bar made a difference by improving the nutritional quality of the snack bar. In all variations that were developed it is observed that there is an increase in nutrients such as fibre, vitamin A, vitamin C, iron and calcium.

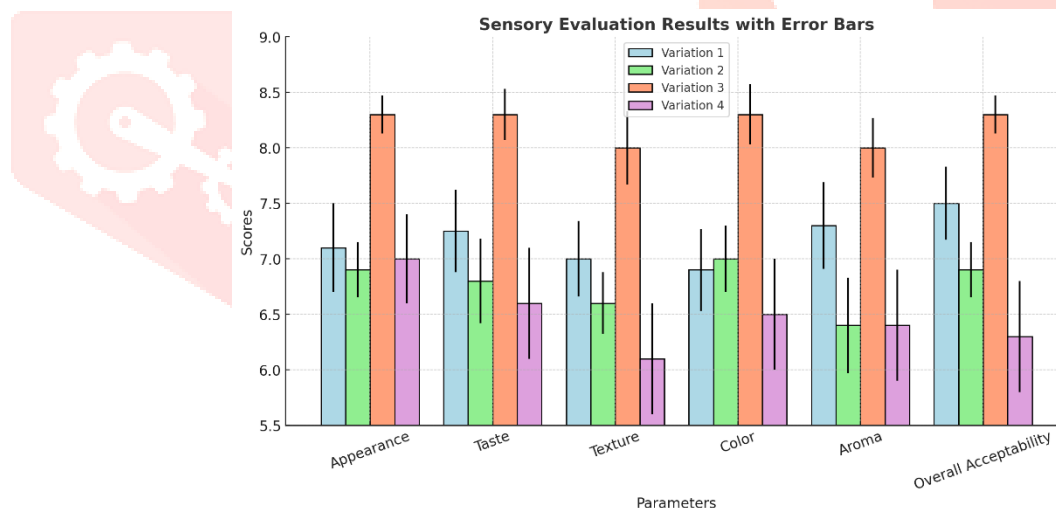
Sensory Analysis

Sensory scores revealed that the snack bar belonging to variation 3 had the highest rating. The snack bar was developed by adding 30 gms of red rice flakes puff, 10 gms of ragi flour, 7.5 gms of pumpkin seeds, 7.5 gms of dried sohiong and 100 gms of jaggery. The scores for Variation 3 with respect to its attributes are appearance 8.3, taste 8.3, texture 8.0, colour 8.3, aroma 8.0 and the overall acceptability was 8.3 and it's the highest recorded score among all the other 3 variations. However variation 4 was rated the lowest in terms of appearance, taste, texture, aroma and overall acceptability.

Table 3
Sensory analysis scores of the different variations of snack bar

Parameters	Variation 1	Variation 2	Variation 3	Variation 4
Appearance	7.1±0.40	6.9±0.25	8.3±0.17	7.0±0.4
Taste	7.25±0.37	6.8±0.38	8.3±0.23	6.6±0.5
Texture	7±0.34	6.6±0.28	8.0±0.33	6.1±0.5
Color	6.9±0.37	7±0.30	8.3±0.27	6.5±0.5
Aroma	7.3±0.39	6.4±0.43	8.0±0.27	6.4±0.5
Overall acceptability	7.5±0.33	6.9±0.25	8.3±0.17	6.3±0.5

Figure 1
Pictorial representation of the sensory analysis scores of the snack bar



Conclusion

To summarize, the current study of employing indigenous ingredients to formulate a snack bar has helped to improve the nutritional content of snack bars and can substitute traditional snack bars available in the local market, such as puffed rice balls. The ingredients utilized are also easily accessible to the local communities, making snack bar formulation easy. This study confirms the effectiveness of adding fruit to the different variations by improving the nutritional content of the snack bars. Indigenous ingredients are underutilized due to lack of knowledge in processing techniques; however, the use of modern technology can help add more value to the indigenous ingredients.

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REFERENCES

1. Agrahar-Murugkar, D., & Subbulakshmi, G. (2005). Nutritive values of wild edible fruits, berries, nuts, roots and spices consumed by the Khasi tribes of India. *Ecology of Food and Nutrition*, 44(3), 207–223. <https://doi.org/10.1080/03670240590953025>.
2. Rymbai, H., Patel, R. K., Deshmukh, N. A., Jha, A. K., Verma, V. K., & Division of Horticulture, ICAR Research Complex for NEH Region. (2016). Physical and biochemical content of indigenous underutilized Sohiong (*Prunus nepaulensis* Ser.) fruit in Meghalaya, India. In *International Journal of Minor Fruits, Medicinal and Aromatic Plants* (Vols. 2–2, Issue 1, pp. 54–56). https://www.ijmfmap.in/pdf_vol2_1/vol_2_11.pdf.
3. Ahmad, A., Irfan, U., Amir, R. M., & Abbasi, K. S. (2017). Development of high energy cereal and nut granola bar. *International Journal of Agriculture and Biological Sciences*. <https://doi.org/10.5281/zenodo.2574522>.
4. Joshi, S., Mudita Verma, & Singh, U. (2022). Development of gluten-free energy bars. ~ 511 ~ the *Pharma Innovation Journal*, 11(6), 511–518. <https://www.thepharmajournal.com/archives/2022/vol11issue6/PartH/11-5-322-878.pdf>.
5. Popkin, B. M., Corvalan, C., & Grummer-Strawn, L. M. (2020). Dynamics of the double burden of malnutrition and the changing nutrition reality. *Lancet (London, England)*, 395(10217), 65–74. [https://doi.org/10.1016/S0140-6736\(19\)32497-3](https://doi.org/10.1016/S0140-6736(19)32497-3).