



ISSN: 0975-833X

Available online at <http://www.journalcra.com>

INTERNATIONAL JOURNAL
OF CURRENT RESEARCH

International Journal of Current Research
Vol. 10, Issue, 12, pp.75885-75887, December, 2018
DOI: <https://doi.org/10.24941/ijcr.6520.12.2018>

RESEARCH ARTICLE

UTILIZATION OF CASSAVA FLOUR BASED NUTRIENT ENERGY BARS & ITS ORGANOLEPTIC PROPERTIES EVALUATION

^{1*}Gupta Sonam and ²Mishra Sunita

¹M.Sc. Student, Department of Food Science and Technology, School For Home Sciences, Babasaheb Bhimrao Ambedkar University, a Central University, Lucknow, Uttar Pradesh, India

²Professor (Dean) Sunita Mishra Department of Food Science and Technology, School for Home Science, Babasaheb Bhimrao Ambedkar University, a Central University, Lucknow, Uttar Pradesh, India

ARTICLE INFO

Article History:

Received 14th September, 2018
Received in revised form
29th October, 2018
Accepted 18th November, 2018
Published online 29th December, 2018

Key words:

Utilization, Fast Foods,
Market, Organoleptic properties.

ABSTRACT

The consumption of Brazilian cassava has been reduced due to a lack of adjustment to the modern lifestyle. To reverse this trend, new products could be developed specifically targeted to high-value markets. Energy bars stand out as fast food high in nutritional value. A bar formula mimicking energy bars was prepared using a mixture of Brazilian cassava flour, ragi flour, wheat flour & sattu flour with honey and jaggery. After being pressed, the bars were dried for 1 hour at 65°C, packed in films, and stored under ambient conditions. Its stability was continuously monitored for 90 days in order to ensure its safety and enable its introduction to the market. The results showed that a 25g cassava flour based nutrient energy bar enriched with other flours such as wheat, ragi, sattu flour can meet a high value of energy for athletes.

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Citation: Gupta Sonam and Mishra Sunita, 2018. "Utilization of cassava flour based nutrient energy bars & its organoleptic properties evaluation", *International Journal of Current Research*, 10, (12), 75885-75887.

INTRODUCTION

Nutrient bars stand out among fast foods due to their balanced nutritional content and convenience. On the other hand cassava flour consumption, despite its importance as a traditional food in Brazil, has significantly reduced because its preparation does not suit modern lifestyles. Nutrition bars have become the food of choice for many people on the run. The bars offer a fast, convenient food source that requires no preparation, a long shelf life and no refrigeration. For this reason many consumers grab them as quick snacks or meal replacements, assuming they are healthy alternatives to other food choices. The concept was to create an energy source for athletes concerned with energy depletion associated with long duration training. Cassava consumption has strong culinary tradition in Brazil. In addition to its use in fried or special dishes, cassava is also processed for flour. Cassava is the third largest source of food carbohydrates in the tropics, after rice and maize.

Objectives

- Development of Nutrient Energy Bars from Cassava flour.

- To study the processing and packaging of the developed product.

MATERIALS AND METHODS

Area of the study: The present study was conducted in the laboratories of the Department of Food Science and Technology, Babasaheb Bhimrao Ambedkar University.

Period of the study: The present study conducted during the period of 2017-2018 session in the whole work comprising period of July 2017 – May 2018.

Tools: Weighing machine, sieve, gas stove, sealing machine, refrigerator.

Collection of ingredients: Cassava Flour, ragi flour, wheat flour, sattu flour, jiggery, and honey were purchased from the local market of Lucknow area.

Preparation of Nutrient Energy Bars: Firstly, collect the ingredients of energy bars such as cassava, ragi, wheat, sattu flour, honey and jiggery. Now, sieve all the flours and roast it on a low flame. All the roasted flours was then allowed to cool at room temperature. Now, all the ingredients were mixed together in a mixing bowl with honey and jaggery added till it

*Corresponding author: Gupta Sonam,

M.Sc. Student, Department of Food Science and Technology, School For Home Sciences, Babasaheb Bhimrao Ambedkar University, a Central University, Lucknow, Uttar Pradesh, India.

agglutinated all mixture together, leaving the sides of the bowl. Now, take 25g of this mixture on the hand and form nutrient bar. All samples of nutrient bars was transferred and allowed to cool in freeze at temperature of (-15±5°).

Packaging: Food packaging is the most reliable method of food containment. This is the best way to safely control and protect the food against physical, chemical, biological and environmental factors.

Tools: Butter paper, Aluminium wrapper, Sealing machine.

Procedure: Nutrient energy bars firstly wrapped in the butter paper with clean and dry hand then in aluminium wrapper. Seal the aluminium wrapper with sealing machine.

RESULTS AND DISCUSSION

The result and discussion chapter is based on the sensory acceptability of Nutrient Energy Bars. In this study the sensory evaluation is done in our Department of Food Science and Technology by expert panel of members, and the technique of sensory evaluation was hedonic scale.

Distribution of Samples

- T1 – Nutrient Energy Bar with jaggery.
- T2 – Nutrient Energy Bar with sugar.
- T3 – Nutrient Energy Bar with coating of honey.

Table 1. Individual markings for body and texture

	T1	T2	T3
Member 1	9	8	7
Member 2	9	9	8
Member 3	9	9	7
Member 4	9	8	9
Member 5	9	8	7
Total	45	42	38

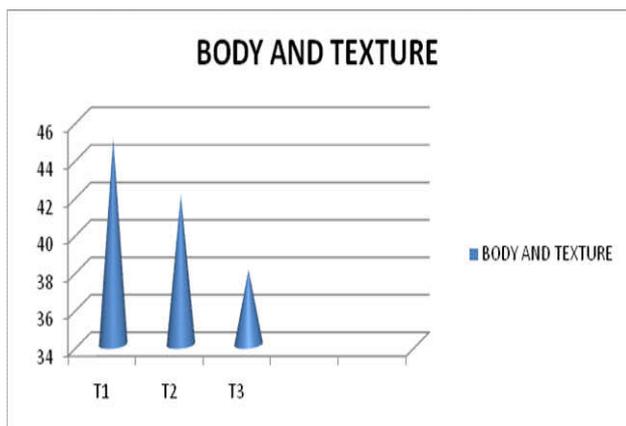


Fig. 1. Graphical Representation- Body and texture

Table 2. Individual markings for colour and appearance

	T1	T2	T3
Member 1	9	8	8
Member 2	8	8	9
Member 3	9	9	8
Member 4	9	8	7
Member 5	8	8	7
Total	43	41	39

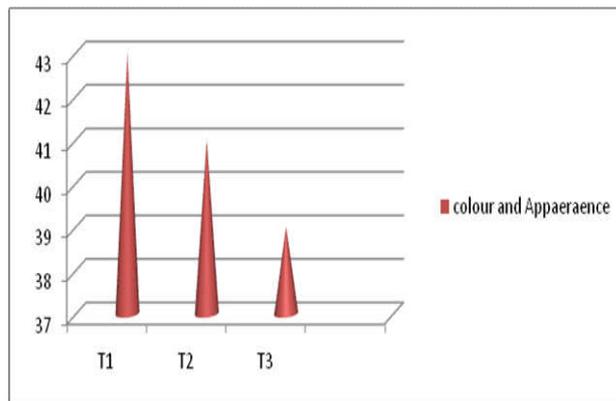


Fig.2. Graphical presentation of colour and appearance

Table 3. Individual markings for flavour and taste

	T1	T2	T3
Member 1	9	9	8
Member 2	9	7	8
Member 3	9	8	7
Member 4	9	8	7
Member 5	8	7	8
Total	44	39	38

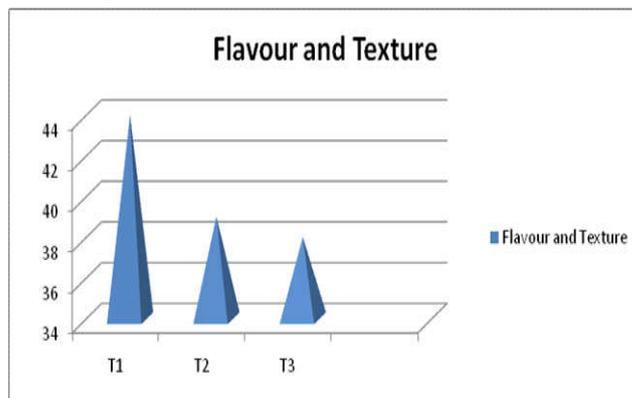


Fig. 3. Graphical presentation of Flavour and Texture

Table 4. Individual markings for overall acceptability

	T1	T2	T3
Member 1	9	8	8
Member 2	9	8	7
Member 3	9	8	7
Member 4	9	9	7
Member 5	9	8	7
Total	45	41	36

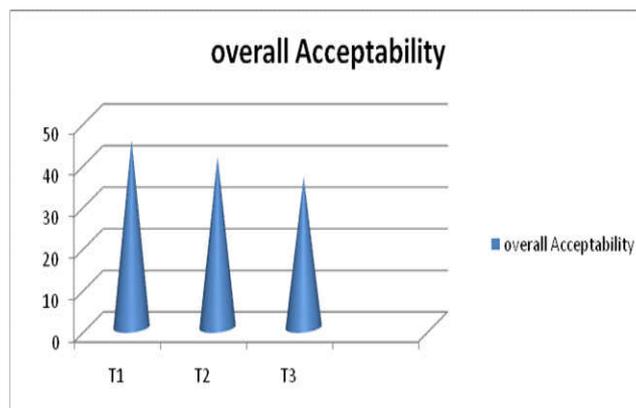
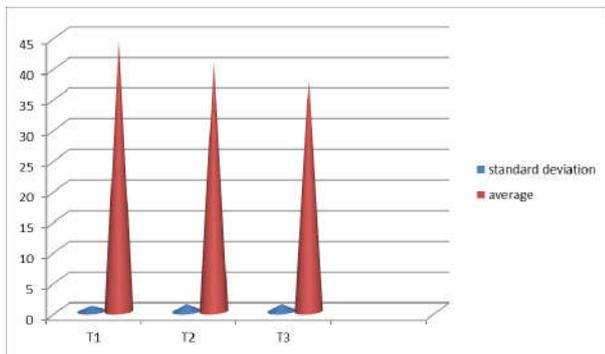


Fig.4. Graphical presentation of overall acceptability

Table 5. Overall calculation

PARAMETERS	T1	T2	T3
1	45	42	38
2	43	41	39
3	44	39	38
4	45	41	36
TOTAL	177	163	151
AVERAGE	44.25	40.75	37.75
STANDARD DEVIATION	0.95	1.25	1.25

**Fig. 5. Graphical presentation of standard deviation and average of different treatments**

Conclusion

Nutrient bars are versatile food product from the food group of a well balance diet. These bars along with other available energy, protein, carbohydrate, fat, and minerals dense foods are marked at people who require a quick source of both macro and micronutrients to supplement their diet. The junk foods are unhealthy snacks foods including chocolate bars and potato chips that cannot furnish the nutrient as that coming from a well-balanced diet. They are disparate from quick energy provided soft drinks that do not supply protein and other micronutrient to the body. Therefore the present study was undertaken with a view to formulation of nutrient bars using recipe standardization and determination of proximate composition. Quality of the bar was judged by using sensory evaluation techniques. The bar was store for the few days than check the shelf-life of nutrient bar.

Effects of store on sensory attributes were undertaken for study. The packaged bar sample were store and maintained at a freezing temperature of $(-10\pm 5^{\circ}\text{C})$.

Recommendation

- Nutrient bars are the best way to get more energy to the body.
- By including nutrient bar into your daily diet, it can help improve cognitive health.
- The people who are concerned about weight loss they need to look at sugar. A bar 4-5 gram of protein or fiber is a major plus because it will help sustain you for longer.
- Easy to carry anywhere.
- An essential nutrient bars help build & repair muscles, which is why many athletes consider as an essential part of their diet.

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