

# A Critical Study of Standardisation of Ready to Eat Granular Bar

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## ABSTRACT

The study entitled “Standardization of ready to eat granular bar” was conducted at the Department of Community Science, College of Agriculture, Vellayani during the period of 2015-2017 with the objective to develop and standardize granular bars using fruits, grains, nuts and pulses and to ascertain its nutritional and sensorial quality. Six different treatments with varying amount of ingredients were formulated for standardization of granular bar. Sensory quality, nutritive value, chemical score and NDP Cal% of each proportion was computed to identify the best combination. Highest nutrient content, chemical score and NDP Cal% were noted for three treatments viz. T1 (30:25:10:5:5:20:5), T2 (20:20:20:5:5:25:5) and T3 (25:25:15:5:5:25:5) and Sensory evaluation was conducted in these three treatments using hedonic rating scale to obtain the best combination. T1 was identified as best formulation with the highest score of 35.30 and was selected as best combination of granular bar.

## INTRODUCTION

Technological developments in the field of food processing equipment and packaging materials have brought about revolution in the development of convenience foods. Convenience foods can be designed to suit all segments of the population including armies, airways, railways and even patients with suitable supplements. Convenience foods are classified as ready to eat foods, ready to use foods and beverages; which are further divided into ready to drink and ready to serve beverages (Manohar and Murali, 2005).

Now days, there is a significant increase in the consumption of “fast foods” and snacks that has been observed as a response to the change in lifestyle of the population. Consumers are looking for easy and fast prepared foods, and ease in the acquisition of pre-prepared, frozen, and ready-to-use products in the market” (Bower & Whitten, 2000). Consumers prefer nutritionally sound and minimally processed convenience foods with longer shelf life. The need of people to consume more nutritious foods instead of sweets and candies has led to the rise of various bar types, which consist of variations like chocolate coating or incorporation of different types of fruits and nuts. The cereals have an important role in the modern lifestyle because of the convenient forms they can be used, such as ready-to-consume instants, cereal bars and energy bars (Silva et al., 2014).

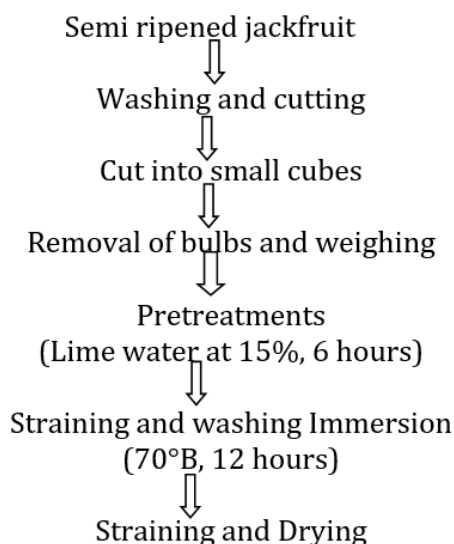
Snack bar, a convenient and healthy ready-to-eat food which supplies balance nutrients (protein, fat, minerals, vitamins, calories, and carbohydrate) and to abate hunger (King, 2006; Ryland et al., 2010; Wyatt, 2011) is continue to increase in sales. Snack bars initially marketed to athletes as a source of energy. Consumers who are dieting, watching their weight or exercising have a higher tendency to look for nutritious food. Nutrition and diet bars and meal replacements are used by health-minded consumers to manage weight, balance nutrition and supplement active lifestyles.

Due to the growing consumer demand for natural, convenient, and nutritious food products, there is a need to modify, innovate and improve the nutritive composition of snack bars for health benefits (Williams et al., 2006; Sun-Waterhouse et al., 2010).

## Materials and Methods

### Selection and processing of ingredients

Puffed rice, oats, bengal gram dhal, groundnuts, flaked rice and osmotically dehydrated jackfruit were incorporated in the granular bar. These ingredients except osmotically dehydrated jackfruit were purchased from the market as such. Puffed rice, flaked rice and roasted oats were the cereal source incorporated in the granular bar. Puffed Bengal gram dhal and roasted groundnuts were used as a source of protein for granular fruit bars. Osmotically dehydrated jackfruit was used in the granular fruit bar as dried fruit. Jaggery was used as a sweetening agent for the product. Osmotically dehydrated jackfruit was processed (Poornima, 2014) and used in the product



**Fig 1:** Flow diagram for development of somatically dehydrated jackfruit

### Standardization and product development

Different proportions of ingredients were formulated to obtain suitable combination for making granular fruit bar. Nutrient composition (ICMR, 2010), chemical score and NDP Cal% and of different proportions were computed. Nutrient density of the proposed treatments were computed using the food composition table Based on the nutrient density, chemical score and NDP Cal% best treatments were selected and developed granular fruit bar. The chemical score was found out using the formula

$$\text{Chemical score (CS)} = \frac{\text{Mg of amino acid in 1g of test protein}}{\text{Mg of amino acid in 1 g of reference protein}}$$

The formula to calculate NDP cal% is given below

$$\text{NDP cal\%} = \frac{\text{Protein calories}}{\text{Total calories}} \times \text{chemical score} \times 100$$

Sensory evaluation of granular bars was carried out using hedonic rating and best formulations were identified. The major quality attributes included for scoring was appearance, cooler, taste, flavor and texture.

## Result and Discussion

### Standardization and product development

To standardize granular bar, different combinations of different ingredients were formulated (Table 1). Puffed rice, roasted rice of flakes and oats, puffed Bengal gram dhal, roasted ground nuts, osmotic ally dehydrated jackfruit cubes and jiggery were the ingredients used in the standardisation of granular bar. Roasting of ingredients acquired crisp texture and rotated flavor. Random checking was done to find out the complete roasting procedure. The cereal component in each combination varies from 10 to 30g. Puffed Bengal gram dal 5g was used. Roasted ground nuts quality ranged from 5 to 15g. Twenty to thirty gram jaggery was incorporated. Quantity of somatically dehydrated jackfruit cubes used at 5g each in all six combinations.

Table1. Formulation of different combinations

Ingredients (g)	Proportions					
	T1	T2	T3	T4	T5	T6
Rice flakes	30	20	25	20	15	20
Puffed rice	25	20	25	20	15	15
Oats	10	20	15	15	15	25
Puffed bengal gram dhal	5	5	5	5	5	5
Ground nuts	5	5	5	5	15	5
Jaggery	20	25	20	30	30	25
Osmotically dehydrated Jackfruits 5	5	5	5	5	5	

## **Colour**

Colour is used as an index to the quality of a number of foods. The product developed from three treatment shows difference in their colour. Treatment 1 obtained highest mean score (7.93). T2 acquired 6.47 and T3 noticed with lowest mean score of 6.13.

## **Flavour**

The flavor of food has three components- odour, taste and a composite of sensations known as mouth feel. A substance which produces odour must be volatile and the molecules of the substance must come in contact with receptors in the epithelium of the olfactory organ. Aroma is able to penetrate even beyond the visual range when comparatively volatile compounds are abundant. Flavour of three treatments shows difference in their values. From this table, it is evident that T1 scored highest mean score of 8.07, followed by T2 (6.73) and T3 (6.26).

## **Texture**

Texture refers to those qualities of a food that can be felt with the fingers, tongue, palate, or teeth. Foods have different textures, such as soft or hard, mushy or crunchy, or smooth or lumpy. The granular bars developed from three treatments vary in their scores and T1 showed maximum score of 7.87 and lowest score secured by T3 (5.8 Mean score attained for T2 was 6.13).

## **Taste**

Taste sensation which the taste buds register are recognized as sweet, salt, sour or bitter. The concentration required for identification is known as "threshold" for that particular substance. Individual difference in their sensitivity to the four taste sensations and the threshold for each of the primary taste is usually not at the same level in any one individual. Maximum taste was recognized in T1 (8.47). The three treatments show significant difference in their values.

## **CONCLUSION**

Hence a product with high nutritional value and high value of 12 as NDP Cal% with good sensory appeal was standardized using fruits, grains, nuts and pulses which can be used as a ready- to eat nutrient rich healthy product. Acknowledgement The project owes all its credit to Kerala Agricultural University for its financial and technical support.

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