

Utilization of coarse grains for formulation of value added snacks

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The present study was carried out with the objectives to prepare *Pua* by incorporating bajra flour and soy flour, to assess the acceptability of developed product and to find the nutritive value as well as analyze elements by LIBS. The bajra flour, wheat flour and soy flour were mixed in the ratio of 10:80:10 (T_1), 20:70:10 (T_2), 30:60:10 (T_3) and 100 per cent wheat flour (control). Sensory analysis indicated that value added snacks were liked very much by the panelists. Nutrient analysis indicated that highest moisture and ash content was found in *Thalipeeth*. Protein content is similar in almost all four products showing highest in *Gatta* while highest carbohydrate, iron, calcium content and energy was found in *Laddo* followed by *Pua*, *Gatta* and *Thalipeeth*, respectively because of addition of jaggery as an ingredient in *Laddo*. Finally, fat content was maximum for *Laddo* and *Pua* followed by *Thalipeeth* and *Gatta*. This may be due to addition of Ghee in *Laddo* and deep frying of *Pua*. Elements detected from LIBS spectra for the developed products were carbon, hydrogen, nitrogen, calcium, iron, sodium, and magnesium. Therefore, it can be concluded that bajra flour in combination with wheat flour and soy flour can be successfully incorporated for the development of nutritious products.

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INTRODUCTION

Coarse grains are the name referred to the millets along with maize and sorghum, which constitute the food of the economically weaker sections of the population of India. Nowadays coarse cereals are gaining popularity amongst those who are accustomed to softer cereals like wheat and rice because of the presence of dietary fiber, beneficial in various degenerative diseases. Insoluble fraction of dietary fiber in cereal grains contains large proportion of cellulose, which has beneficial effects in the gastrointestinal tract. The soluble fractions, which mainly consists of pectin, arabinoxylan and β -glucan has the ability to lower blood serum cholesterol,

through its tendency to increase viscosity in the intestine (Mridula and Gupta, 2008)

Millets are hardy plants capable of growing where most other cereal grains would fail. These are mostly grown in area with low rainfall, poor irrigation facilities and low soil fertility. These are well suited for dry farming. In developing countries, with the current rate of increase in population and less than adequate irrigational facilities, millets adequately meet the demand for additional food supply. These are especially beneficial to vegetarians who depend on plant food for their protein nourishment. It is reported that cardiovascular diseases, duodenal ulcers and hyperglycemia occurs rarely in regular millet eaters. Since millets which are rich in fiber are used less as staple though available in plenty, it would be worth while considering a supplementation study with selected millet. (Menon, 2004)

Among millets, bajra (Pearl millet) is the predominant crop of India which a staple food of rural people of dry land regions of India. In India, pearl millet is the 4th most important staple food crop after rice, wheat and sorghum (Singh et al., 2006). Bajra is comparable and even superior in some of the nutritional characteristics to major cereals with respect to its energy value,

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