

Standardisation and Nutritional Evaluation of Products Prepared from Bengal Gram Flour

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INTRODUCTION

Legumes and pulses are the most commonly used plant food materials in our country. Besides being a good source of dietary protein, other nutrients are also supplied in appreciable amounts. Legumes are prepared for consumption in several ways such as whole legumes, dhal and legume flour.

Bengal gram is an important pulse which ranks the highest both in production and consumption in India. It is estimated that about 75 percent of chickpea is dehulled to produce dhal (Chavan et al., 1987). Due to fine flour and quick cooking quality, chickpea is used for main meal snacks and sweets. Primary processing method like dehulling of the pulses results in reduction of fibre and tannin content, but, there is an improvement in appearance, cooking quality, palatability and digestibility (Singh, 1993). Secondary processing such as soaking, cooking, sprouting and fermentation improves the bio-availability of nutrients by partly and wholly removing some of the anti-nutritional factors and toxic constituents (Singh et al., 1989; Bishnoi and Khetrapaul, 1994; Singh, 1995).

MATERIALS AND METHODS

Procurement of the Samples: The chickpea (PBG-3) was procured from the Department of Plant Breeding, Punjab Agricultural University, Ludhiana. The sample was ground to fine powder and stored in air tight containers for further use. *Standardization and Preparation of Recipes:* The following two recipes namely *Halwa* and *Burfi* were prepared and standardized

Halwa

Ingredient:

Bengal gram flour	200g
Sugar	200g
Oil	150g
Water	160ml

Method: Sugar syrup was prepared with water. Oil was heated in a *Karahi* (Utensil). The Bengal

gram flour was added and fried till golden brown. Sugar syrup was added slowly while stir-ring continuously. Cook it on the slow flame till done

Burfi

Ingredients:

Bengal gram flour	200g
Sugar	200g
Oil	140g
Water	120ml

Method: Sugar syrup was prepared with water. Oil was heated in *Karahi*. Bengal gram flour was added and was fried till it became golden brown. Slowly sugar syrup was added with continuous stirring to Bengal gram flour and was cooked on slow flame for 5-10 minutes. A plate was greased with oil and above prepared mixture was put and spread on it. After cooling till set, cut the *Burfi* in square pieces.

Cooked recipes were weighed, homogenized and dried at $60 \pm 2^\circ \text{C}$. Dried samples were ground and stored in air tight containers for further analysis.

Chemical Analysis of the Products: The dried samples were analysed for proximate composition i.e. moisture, total ash, crude fibre, crude fat (AOAC 1985) and CHO and energy content(by calculating method)

Statistical Analysis: From the data obtained the mean values and standard deviation for each sample was calculated. Samples were analysed using the F-test (one way analysis of variance).

RESULTS AND DISCUSSION

The data on proximate composition of Bengal gram flour products have been presented in table . The result revealed that the moisture content of Bengal gram flour, *Halwa* and *Burfi* was found to be 8.01, 2.40 and 3.00 g/100g respectively. Moisture content of cooked products was found significantly ($P < 0.01$) lower than the raw (BGF) sample on dry matter basis. A significant decrease in ash content was also observed. The decrease might be due to more uptake of oil during frying. Kaur (1990) also reported lower content of ash

after frying than its raw counterparts.

The protein content of Bengal Gram flour *Halwa* and *Burfi* was found to be 11.43 and 10.73g/100g, respectively. A decrease of 48.5 and 50.9 percent was observed in *Halwa* and *Burfi*, respectively (Table 1). The decrease in protein content might be due to very high temperature (200° C) to which products were subjected. At high temperature browning takes place due to maillard reaction which may interfere with protein to form complex product. Another reason may be because of addition of other ingredient for the preparation.

Fat content of the Bengal gram flour (besan)

Table 1: Proximate composition of raw and cooked Bengal gram flour (BGF) products (g/100g DM)

	BGF	Halwa	Burfi
Moisture	8.01 ± 0.01	2.40 ± 0.20	3.00 ± 0.10
Ash	2.39 ± 0.23	1.95 ± 0.22	1.92 ± 0.29
Protein	21.85 ± 0.65	11.47 ± 0.07	10.73 ± 0.27
Fat	4.59 ± 0.10	25.83 ± 0.19	25.07 ± 0.26
Crude fibre	1.10 ± 0.10	1.07 ± 0.39	1.06 ± 0.27
CHO	62.06	57.28	57.56
Energy (Kcal/100g)	377	507	498

Values are Mean ± SD

was found as 4.59 g/100g. A significant increase was found in *Halwa* and *Burfi*. The increase was 82.2 and 81.6 percent, respectively. The increase in fat content may due to additional fat used during cooking. The crude fibre content of cooked products was found to be lower than its raw counterparts. Energy content of the Bengal gram flour was found as 377 Kcal/100g. Where as it was found to be increased in *Halwa* (507Kcal/100g) and *Burfi* (498Kcal/100g). Since the products were prepared from locally available ingredients and were found to be nutritionally rich especially in fat content. Such products can prove to be useful

in improving the energy content of the diet of undernourished section of developing countries like India.

KEY WORD Bengal Gram Dhal. Protein. Fiber. *Halwa* and *Burfi*.

ABSTRACT In the present investigation two products namely *Halwa* and *Burfi* were prepared and were analysed for proximate composition. The moisture, ash, protein, fat, crude fibre and energy content of raw sample were found 8.01, 2.39, 21.85, 4.59, 1.10 g/100g and 377 Kcal/100g, respectively. A significant decrease in moisture, ash, protein and crude fiber content of the products was observed after cooking. Whereas a significant ($P < 0.01$) increase in fat content and energy content was observed in the both products i.e. in *Halwa* and *Burfi*. The increase in fat content was 82.2 and 81.6 percent, respectively. This increase might be due to additional fat added during cooking which improved the energy content of the products.

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