

Development of green gram fortified biscuit

■ S. R. PATIL, S. P. KURHEKAR AND R. R. PATIL

SUMMARY : The physico-chemical properties of green gram were studied to assess the important feasibility of green gram in food and byproduct. Total carbohydrate, protein content, moisture content, crude fiber, fat content and ash content were 56.7, 24.0, 9.3, 4.1, 1.3 and 2.9, respectively. The chemical composition of green gram was carried out and it is found from results that green gram is a rich source of protein (24%) and carbohydrate (56.7%). Protein content initially increases and then decreases as germination time increases. Sensory analysis of biscuit showed that the biscuit with 20 per cent fortified green gram flour was having better taste, flavour and overall acceptability than those with 10 per cent fortified green gram flour and control.

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Green gram or mung is being cultivated in India for over 2000 years. Green gram is a good source of carbohydrate, protein and fat. Cooked green gram dhal is digestible to all individuals. It is very useful during childhood, pregnancy; lactation etc. to get required nutrition. It promotes health and safe guard eyesight due to high protein content.

With increasing urbanization, the demand of processed food is increasing rapidly. Among processed foods, bakery products particularly biscuits command wide popularity in rural as well as urban area among all age groups. The basic aim of biscuit production is to provide glucose. By addition of green gram dhal flour protein enriched biscuit can be prepared.

EXPERIMENTAL METHODS

The green gram fortified biscuits was prepared at Sau. KSK College of Food Technology, Beed. Raw material used for preparation of fortified biscuits were

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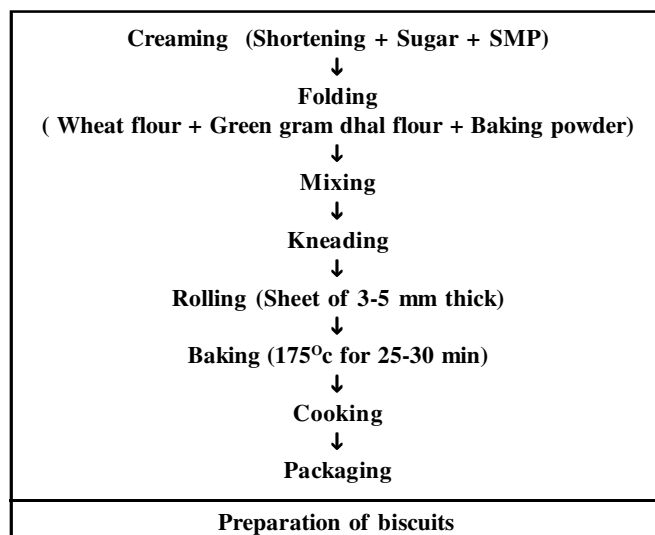
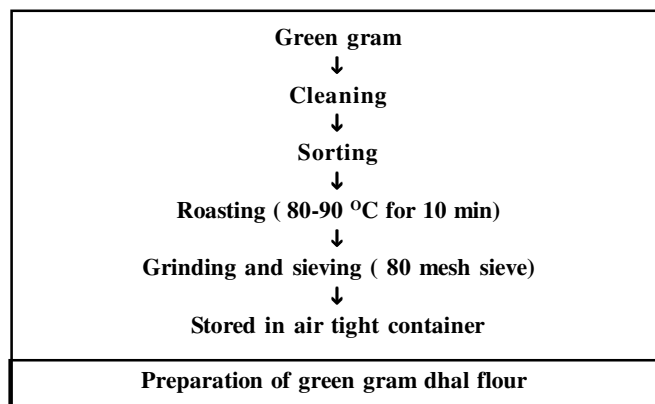
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wheat flour, green gram dhal, baking powder, skim milk powder, sugar. Material was procured from local market.



Ingredients	Control	Sample A (10%)	Sample B (20%)
Wheat flour (g)	100	90	80
Green gram flour	00	10	20
Sugar (g)	50	50	50
Fat (g)	40	40	40
Baking powder(g)	1.2	1.2	1.2
Skim milk powder (g)	10	10	10

A - Sample with 10 per cent green gram flour

B- Sample with 20 per cent green gram flour

Chemical characteristics :

Moisture content, ash content, protein and fibre were estimated by using A.O.A.C. (1975) method.

Sensory analysis :

The sensory characteristics like colour, appearance, flavour, taste of the product were determined. The organoleptic acceptability was determined by a panel of semi trained judges.

EXPERIMENTAL FINDINGS AND ANALYSIS

Experiments were conducted to prepare and to utilize green gram flour in biscuit and standardize formulation of biscuit. The physicochemical properties of green gram and chemical composition of green gram flour were studied (Table 1 and 2).

Sr. No.	Physicochemical properties	Percentage
1.	Total carbohydrate	56.7
2.	Protein content	24.0
3.	Moisture content	9.3
4.	Crude fiber	4.1
5.	Fat content	1.3
6.	Ash content	2.9

Sr. No.	Chemical parameter	Control sample	Sample A (10%)	Sample B (20%)
1.	Moisture	1.71	1.86	1.97
2.	Protein	6.5	6.9	7.1
3.	Fat	13	13.15	13.3
4.	Fibre	0.6	0.6	0.7
5.	Ash	0.32	0.036	0.035

Sensory evaluation :

Organoleptic evaluation of biscuit made with fortification of green gram flour was done for appearance, colour, flavour, taste, texture and overall acceptability. Sensory evaluation was carried out by using ten point hedonic scales. Fortification with 20 per cent green gram showed better result (Table 3).

Sr. No.	Sample	Appearance	Colour	Flavour	Taste	Texture	Overall acceptability
1.	Control sample	6.6	6.7	7.4	7.4	6.6	7.2
2.	Sample A (10%)	7.08	7.6	7.1	7.8	7.1	7.9
3.	Sample B (20%)	6.9	7.8	7.6	8.1	7.1	7.9

Summary and conclusion :

Physical and chemical composition of green gram was studied and incorporated to prepare fortified green gram biscuits. The physico-chemical properties of green gram were studied to assess the important feasibility of green gram in food and byproduct. Total carbohydrate, protein content, moisture content, crude fiber, fat content and ash content were 56.7, 24.0, 9.3, 4.1, 1.3, and 2.9, respectively. The chemical composition of green gram was carried out and it is found from results that green gram was a rich source of protein (24%) and carbohydrate (56.7%). Protein content initially increases and then decreases as germination time increases. Moisture, protein, fat, fibre and ash of sample A (10%) were 1.86, 6.9, 13.15, 0.6 and 0.036 and for sample B (20%) 1.97, 7.1, 13.3, 0.7 and 0.035, respectively. Sensory analysis of biscuit showed that the biscuit with 20 per cent fortified green gram flour was having better taste, flavour and overall acceptability than those with 10 per cent fortified green gram flour and control sample.

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