

Amla (*Emblica officinalis*) pomace high fibre fortified biscuit

R.M. THORAT, N.C. BHAMARE, K.D. NAGARGOJE AND S.A. SHAIKH

ABSTRACT

Amla (*Emblica officinalis*) dietary fibre enrichment biscuit promising technologies was prepared, Dietary fibre, Vitamin C, and antioxidant enrich biscuit have been developed by incorporation of Amla pomace can be product generated during Amla juice processing, Amla pomace as a fibre source were incorporated at 10, 20, 30 per cent in to a Amla pomace for high fibre biscuit were added 90, 80, 70 per cent Wheat flour for a high fibre biscuit. Sensory evaluation of prepared biscuit showed that up to 20 per cent Amla pomace could be incorporated in the preparation of good quality biscuit the dietary fibre content finished product was about than the control the fibre and Vitamin C concentration were 3.8 per cent of fibre and Vitamin C -0.242 per cent per 100g of in biscuit. This biscuit prepared incordance with the invented process can be supplemented fibre, Vitamin C and antioxidant fortified diet for children and adult like, the fibre enriched biscuit may be helpful in curring the constipation and other aliments of Amla pomace biscuit indicated it to be quite profitable.

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Key Words : Biscuit, Fibre, Vitamin, Amla biscuit, Bakery products

INTRODUCTION

Bakery products are now in common use in India and are preferred and loved by almost every individual irrespective of class aged. Bakery industries have very important role to play in the economic development of the country and also in building the health of people. Amla fruits are in use since from traditional Indian system as medicines because of its therapeutic value (Agarwal and Chopra, 2004) Amla has acquired wide popularity all over the world for its medicinal properties. It is rich source of ascorbic acid (vitamin C) and also contains tannin, polyphone, pectin, gallic acid and fibre. Amla fruits are used as medicines to treat common colds, gastric troubles, headache ,constipation, enlarged liver etc. They also play different roles in our human body such as to clean blood , reduce cholesterol and provide energy to heart , brain, and liver and also in the diagnosis of diarrhea. Amla is not used only because of its medicinal value but also they used in the preparation of cosmetics, hair dye, pickles and for the preparation of mouth fresheers. Dietary fibre has been defined as the plant cell polysaccharides and lignin not hydrolyzed by the digestive enzyme of animals and Humans (Dennis T. Gordon, 1989). In corporation of fibre sources such as cereal, bran, pulse and husk can increase fibre content of the biscuit, but the biscuit made

by incorporating these materials can not provide a good taste and flavour. Incorporation of amla pomace in biscuit increase fibre content as well as sensory attributes of biscuit (Reddy, 2008).

Dietry fibre is not equivalent to crude fibre because crude fibre are the materials which remain after rigorous treatment of a food sample with acid and alkali (Gilbert .A. Leveille 1976).

METHODOLOGY

Preparation of Amla pomace powder:

Juice was extracted from Amla (*Emblica officinalis*) to obtain Amla pomace. Amla pomace was blanched in boiling water ($80 \pm 2^{\circ}\text{C}$) for 3 min, immediately cooled by exposing to air and dried at ($60 \pm 2^{\circ}\text{C}$) for 5 min. Dried

Parameters	Ingredients	Control	Sample A	Sample B	Sample C
Variable parameters	Amla	10	20	30
	pomace flour (g)	100	90	80	70
Constant parameters	Sugar (g)	50	50	50	50
	Fat (g)	40	40	40	40
	Baking powder (g)	1.2	1.2	1.2	1.2

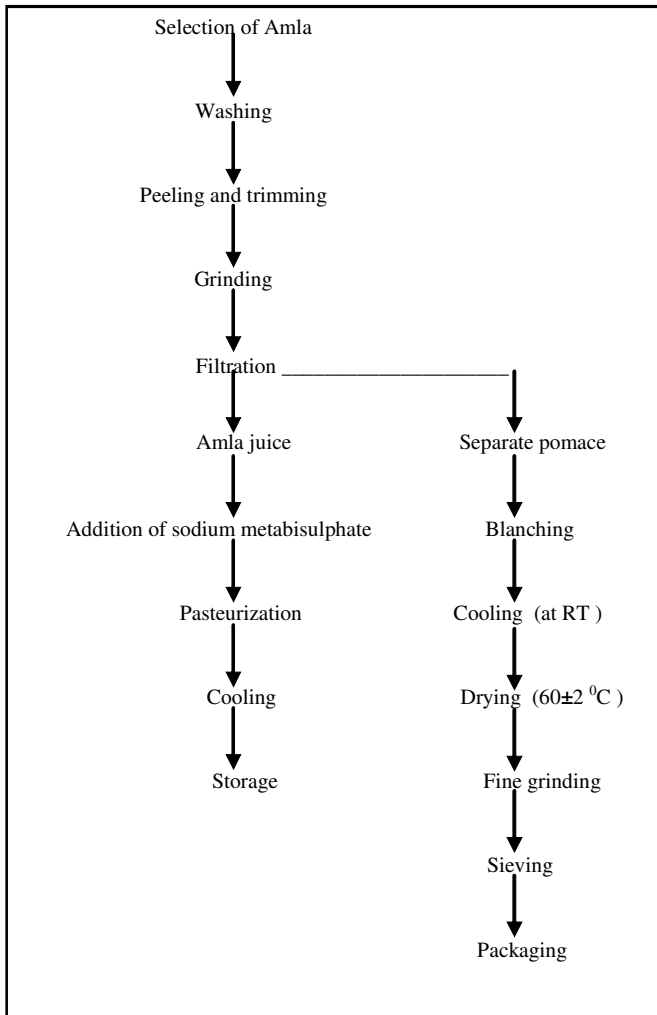


Fig. a : Flow chart of preparation of Amla pomace (Kumari and Grewal, 2007)

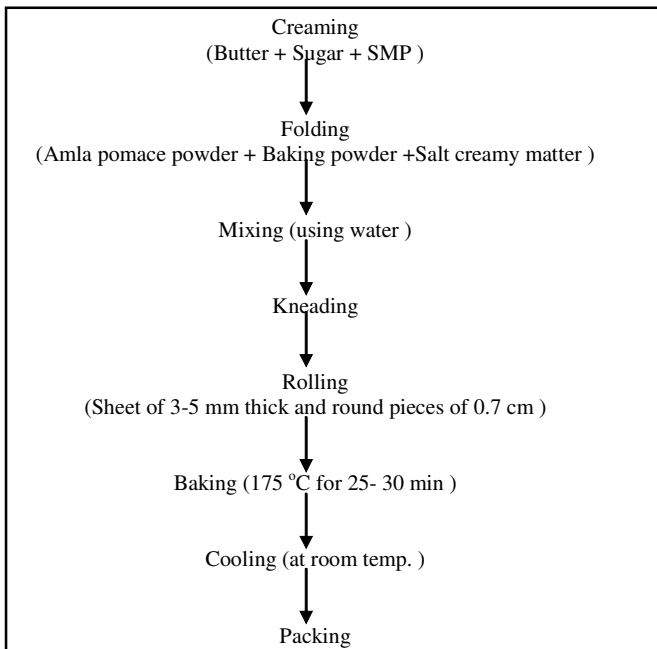


Fig. b : Flow chart for preparation of Amla pomace biscuit

Amla pomace was ground to fine powder to pass through 40 mesh sieve and packed in polythene bags (Kumari and Grewal, 2007).

The proportion of ingredient in standardized for mules of biscuit were given above. Amla pomace powder at 10, 20, 30 gms was incorporated in the standardized formula process. Amla pomace powder was mixed with half of dough. Both the portion of dough were rolled and placed over each other and rolled tightly. The rolled dough was chilled for 1 hour sheet of 3-5 mm thick and round places of 0.7 cm were cut baked at 160-175°C for 25-30 minutes.

OBSERVATIONS AND ASSESSMENT

In order to evaluate the quality and acceptability of Amla pomace, the chemical analysis as well as organoleptic evaluation was followed in present investigation. Similarly, the quality of refined wheat flour, Amla pomace powder used for manufacturing of Amla pomace high fibre biscuit was also evaluated. The good quality cream coloured Amla pomace powder was prepared and before using it in preparation of Amla pomace high fibre biscuit it was analyzed for chemical quality. The chemical analysis and fibre content was 15 mg /100 g and 16.7 per cent, respectively.

Sensory evaluation of Amla pomace biscuit:

The sensory evaluation of any consumable product is the best method of judging the acceptability of the product by the consumers. The assessment was done by studying the characteristics like colour, texture, taste and flavour and overall acceptability of the product by the panel of judges (Fig. 1).

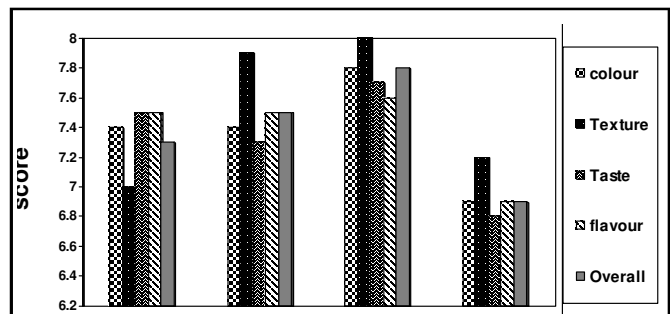


Fig. 1 : Sensory evaluation of Amla pomace biscuit

The average rating for colour of different samples of Amla pomace high fibre biscuit was found to be 7.9, 7.4, 7.8, and 6.9, respectively. It shows that the rating for colour of control was highest *i.e.* 7.9, followed by sample B is 7.8. It was because of gram level of Amla pomace

Table 1 : Chemical analysis of Amla pomace biscuit (per cent)

Sr. No.	Treatment	Fat	Crude fiber	Vit. C	Protein	Carbohydrates	Ash
1.	Control T ₀	20	0.968	-	8.12	65	1.42
2.	T ₁	25.08	2.2	0.116	9.55	58.31	2.02
3.	T ₂	22.59	3.80	0.242	9.40	60.01	2.23
4.	T ₃	21.01	4.62	0.349	9.11	59.65	2.66

powder adversely affects colour of Amla pomace high fibre biscuit.

The average rating for texture of different samples of Amla pomace high fibre biscuit was found to be 7.0, 7.9, 8.0, and 7.2. It showed that the rating for texture of sample B was highest *i.e.* 8.0. It caused the moisture retaining capacity of Amla pomace powder.

The average rating for flavour of different samples of Amla pomace high fibre biscuit was found to be 7.5, 7.5, 7.6 and 6.9, respectively. It showed that the rating for taste of sample B was highest *i.e.* 7.6 It cause due to combination of wheat flour and Amla pomace powder at moderate level because beyond this level Amla pomace shows Amla flavour which was unacceptable by panel judges.

The average rating for taste of different samples of Amla pomace high fibre biscuit was found to be 7.5, 7.3, 7.7 and 6.8, respectively.

The average rating for overall acceptability of different samples of Amla pomace high fibre biscuit was found to be 7.3, 7.5, 7.8, 6.9, respectively. It show that the rating for overall acceptability of sample B was highest *i.e.* 7.8 It caused due to combination of wheat flour and Amla pomace powder at moderate level and texture which was unacceptable by panel judges. Rana *et al.* (2007) states that the substitution of wheat bran and pigeonpea broken flour in biscuit formulation to increase protein, fibre. In that biscuit wheat flour was replaced by wheat bran and pigeonpea broken flour to the extent of 25 per cent and 20 per cent, respectively and dough water replace by paneer whey to improve the quality of biscuit whey work as flavour enhancer and extender of caramel and fundago in biscuit. It shows that lightly effect in sensory evaluation but similarly effect show that in protein and carbohydrates.

The Amla pomace high fibre biscuits were analyzed for crude fibre content. The result are T₀, T₁, T₂, T₃ in treatment fibre content is 0.968, 2.2, 3.80 and 4.62 per cent. It shows that the crude fibre content of different samples increases significantly which caused due to increase in amount of Amla pomace as well as due to crude fibre content from Amla, and also like that of fibre content also analyzed the vitamin C content.

The data presented in Table 1, indicate that the

average vitamin C content of different samples of Amla pomace high fibre biscuit was found to be nil, 0.116, 0.242, 0.349, respectively.

This kind of study was also made by Kumari and Grewal (2007) and they have obtained similar result. Rana *et al.* (2007) that the substitution of wheat bran pigeonpea broken flour in biscuit formulation increased protein and fibre content and found a similar result. Dietary fibre is not equivalent to crude fibre because crude fibre are the materials which remain after rigorous treatment of a food sample with acid and alkali. Reddy (2008) reported that the amla Dietary fibre enrichment biscuit promising technology was prepared. Dietary fibre Vit. C and antioxidant enriched biscuit have been developed by incorporation of amla pomace can be product generated I got same result.

The average carbohydrate content of different samples of Amla pomace high fibre biscuit was found to be 65, 58.31, 60.01 and 59.65, respectively.

The average moisture content of different samples of Amla pomace high fibre biscuit was found to be 1.94, 2.91, 2.95 and 2.99, respectively.

It shows that moisture content from wheat flour as well as in amount of Amla pomace powder was increased.

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