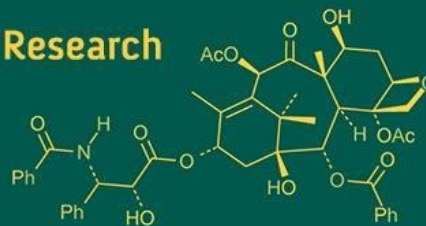


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A study converting Amla (*Gooseberry*) into value-added delights: Candy and Halwa

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Abstract

Emblica officinalis or Amla is a fruit of deciduous tree which belongs to family Euphorbiaceae Amla undeniably a powerhouse of nutrients. It is a little fruit stuffed with versatile and miraculous health benefits. Its play vital role in maintaining the human health. Amla is sour and astringent taste fruit, making the fruit less palatable to eat directly as fresh fruit; hence it can be consumed in processed forms. The present study was under taken with the objective of developing Amla lollipops and Amla Halwa, which are unique and delightful products made by combining the tangy flavor of Amla with the natural sweetness of jaggery. The Amla lollipops was prepared by using amla pulp, jaggery and spices. Two variations of Lollipops were developed by incorporating amla pulp with jaggery and another with sugar and Amla Halwa was prepared by using amla pulp, jaggery and ghee. Three variations of Halwas were developed by incorporating amla pulp with jaggery and ghee. The study conclude that out of two variations of Amla lollipops. The Amla lollipops made by jaggery was more acceptable, than the lollipops made from sugar. Amla halwa was prepared with 3 variations such as sample 1 [Amla 48%, Jaggery 48%], sample 2 [Amla 50%, Jaggery 45%], sample 3 [Amla 42%, Jaggery 52%], In this the sample 3 which was prepared with 42% of Amla and 52% of Jaggery was more acceptable than sample 1 and 2 according to sensory evaluation. During storage period (60 days) there is decrease in texture and flavor sensory scores in Amla lollipops and in Amla Halwa there is a slight decrease in taste and flavor sensory scores.

Keywords: Amla lollipop, Amla Halwa

Introduction

Emblica officinalis or Amla is a fruit of deciduous tree which belongs to family Euphorbiaceae. It is a well known Indian medicinal herb which provides numerous health benefits. Amla (*Emblica officinalis*) is one of the good natural sources of nutraceuticals and functional component. It is second richest source of vitamin C (ascorbic acid) having approximately 600 to 700 mg per fruit. It has high content of tannin which is responsible for its antioxidative property. Amla contains gallic acid which is a potent polyphenol and has been found to improve immunity system of our body. Amla undeniably a powerhouse of nutrients. It is a little fruit stuffed with versatile and miraculous health benefits. It is also known as amla, amali, Indian gooseberry and nelli etc. Its play vital role in maintaining the human health. Amla contains protein, carbohydrates, fiber, amino acids. Calcium, phosphorus, iron, niacin, carotene, thiamine, riboflavin these are minerals present in fruit. Plant contains chemical constituents includes tannins, gallic acid, ellagic acid, emblicol, phyllembin, lupeol, essential oil, fixed oil etc. It is widely used in diuretic, laxative, liver tonic, antipyretic, hair tonic and ulcer prevention. Amla is the best natural source of vitamin C which helps in keeping the skin healthy and strengthens the immune system of the body. It has very good antioxidant that can prevent ageing and rejuvenate the cellular structure keeping it young and healthy for a long time. This herb prevents our body from bacterial and viral ailments like cold and cough. It is a branching tree with average height of 8-18m with glabrous branches. Flowers are greenish yellow in colour and its two types male flower and female flower. Fruit colour is pale yellow and are 1.3-1.6 cm in diameter. The fruits are shown fleshy with sour, astringent taste with spherical in shape and six vertical bands. The origin of amla is South and Central India, Sri Lanka, Malaysia and South China. Amla is sour and astringent taste fruit, making the fruit less palatable to eat directly as fresh fruit; hence it can be consumed in processed form.

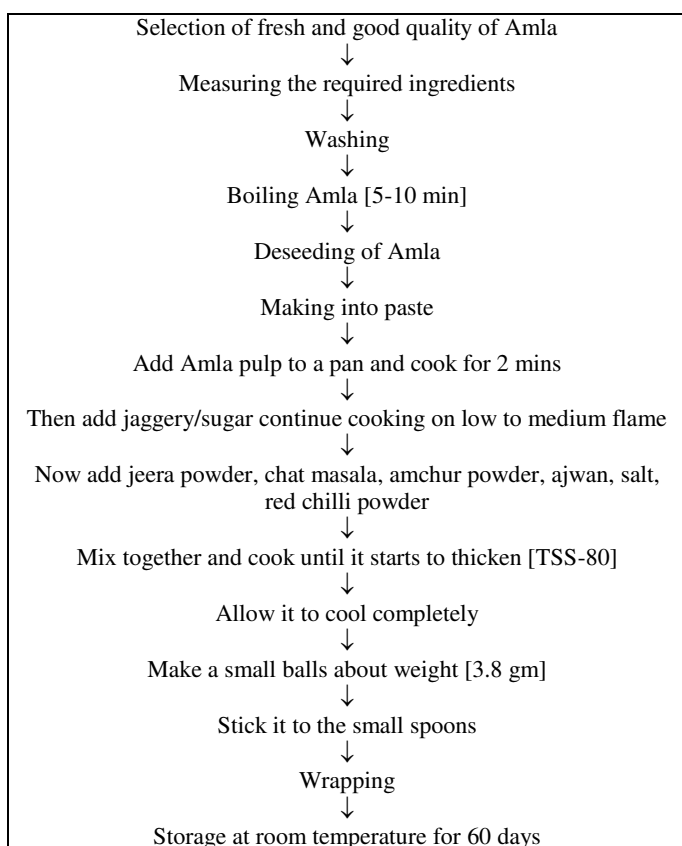
Preparing powder and candy from amla fruit can increase its acceptability, the market value of it and be utilized to develop new value-added products.

Materials and Method

The amla fruits were collected from local market Gadag. Well matured fruits of uniform size and free from bruises were used for the study. Selected fruits were washed thoroughly with clean water and boiled for about five to ten minutes with equal amount of water for easy separation of seed and pulp. Then the separated pulp was used for preparation of Amla lollipop.

Formulation of Amla lollipop

The Amla lollipop was prepared by using amla pulp, jaggery and spices. Two variations of Lollipops were developed by incorporating amla pulp with jaggery and with sugar. The design of experiment was Completely Randomized Block [CRD] with 2 treatments. Amla lollipops was prepared according to procedure illustrated below.



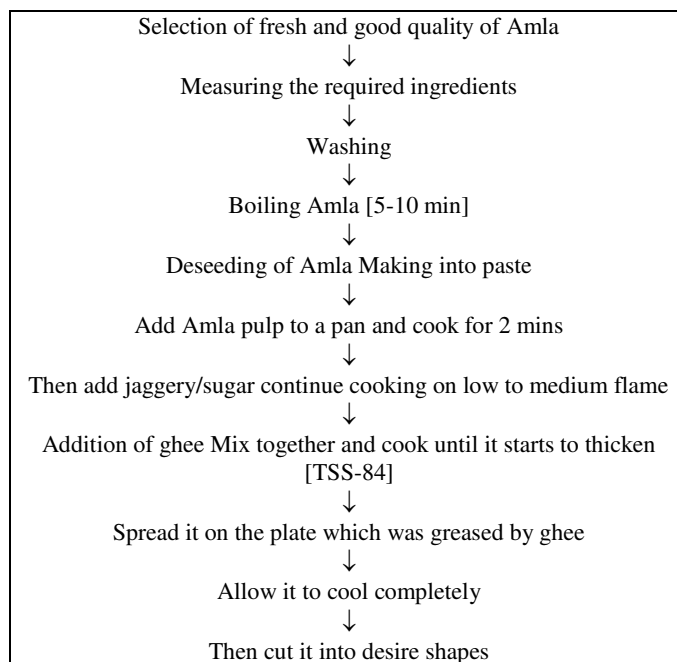
Flow chart for Amla lollipop preparation

Table 1: Shows variation in ingredients taken for the preparation of Amla lollipop

Ingredients	Sample 1(T ₁)	Sample 2(T ₂)
Amla pulp	42 g	42g
Jaggery	52	-
Sugar	-	52g

Formulation of Amla Halwa

The Amla Halwa was prepared by using amla pulp, jaggery and ghee. Three variations of Halwas were developed by incorporating amla pulp with jaggery and with sugar. The design of experiment was completely Randomized Block [CRD] with 3 treatments. Amla lollipops was prepared according to procedure illustrated below.



Flow chart of preparation of Amla Halwa

Table 2: Shows Variations in ingredients for the preparation Amla Halwa

Ingredients	Sample 1	Sample 2	Sample 3
Amla pulp	48 g	50 g	42 g
Jaggery	48 g	45 g	52 g

Sensory Evaluation of the Developed Products the products were subjected to sensory evaluation to evaluate the sensory quality attributes like appearance, colour, texture, flavour, taste and overall acceptability by a semi-trained panel of 10 members on a nine-point hedonic scale.

Result and Discussion

Table 3: Shows the comparison between sample 1 which is prepared with jaggery and sample 2 which is prepared with sugar. The mean sensory scores of both products indicated that texture score and taste score were highest in sample 1 compared to sample 2. The Appearance of the both the samples were same and colour rating of the sample 1 i, e 8.2 which is highest than sample 2 i, e 8.1 and texture score of the sample 1 i, e 8.1 which most highest when compared to the texture score of the sample 2 i, e 7.5, then the taste of the product which is prepared with jaggery sample 1 has the score i, e 8.6 which is highest and the lowest score of sample 2 is 8.3 and the flavor and aroma of both the is almost same i, e around value 8 and the comparison shows that the index of acceptance decreased with addition of sugar in Amla lollipops and the best score of texture, taste and overall acceptability was observed in sample 1 then in sample 2.

Table 3: Shows the sensory evaluation of Amla lollipop

Sensory parameter	Sample 1(Jaggery)	Sample 2(Sugar)
Appearance	8.5	8.5
Color	8.2	8.1
Texture	8.1	7.5
Taste	9	8.3
Flavour	8.2	8
Overall acceptable	8.8	8

Table 4: Shows the mean sensory score of sample 1 [Amla 48%, Jaggery 48%], sample 2 [Amla 50%, Jaggery 45%] and sample 3 [Amla 42%, Jaggery 52%]. The appearance and colour score of the sample 1, 2 and 3 are almost same i.e. 8.4, 8.4 and 8.5 respectively and 8.5, 8.4 and 8.5 respectively. (CV Kanchana *et al.*, 2022) ^[8] Amla candy was prepared with (Amla + 68% Sugar syrup + 10% Spices) are

found to be the best amla candy, this investigation, the treatment T₂ (Amla + 68% Sugar syrup + 10% Spices) was found most suitable treatment in terms of Physico-chemical properties i.e., total soluble solids (71.12), titrable acidity (0.68), pH (3.54) and ascorbic acid (108.33) and organoleptic test i.e., color and appearance (8.36), taste (7.96), aroma (7.96) and overall acceptability (8.13).

Table 4: Show the sensory evaluation of Amla Halwa

Sensory attribute	Sample 1(Amla 48%, Jaggery 48%)	Sample 1(Amla 50%, Jaggery 45%)	Sample 1(Amla 42%, Jaggery 52%)
Appearance	8.4	8.4	8.5
Color	8.5	8.4	8.5
Texture	7.5	8.1	8.8
Taste	7	7.5	8.7
Flavour	7.2	7.4	8.3
Overall acceptability	7	7.5	8.8

Texture score for the sample 1 i.e. 7.5 and sample 2 i.e. 8.1 which are lowest then the sample 3 score i.e. 8.8 and Taste of the product varies depending upon the jaggery % because the Amla is very bitter in taste hence the sample 3 has the highest score i.e. 8.7 [Amla 42%, Jaggery 52%] and sample 2 i.e. 7.5 and sample 3 has the lowest taste score i.e. 7 and flavor score of the sample 1, 2 and 3 are 7.2, 7.4 and 8.3 respectively and the best score of texture, taste and overall acceptability was observed in sample 3 then in sample 2 and 3 hence the sample 3. The results are supported with the Amla jelly is prepared by (Akshara M *et al.*, 2019) ^[5] and results was found that Sensory evaluation was also performed and the developed jelly obtained an excellent sensory score.

Conclusion

Amla is sour and astringent taste fruit, making the fruit less palatable to eat directly as fresh fruit; hence it can be consumed in processed forms. The present study was undertaken with the objective of developing Amla lollipops and Amla Halwa, which are unique and delightful products made by combining the tangy flavor of Amla with the natural sweetness of jaggery. The Amla lollipops were prepared by using amla pulp, jaggery and spices. Two variations of Lollipops were developed by incorporating amla pulp with jaggery and another with sugar and Amla Halwa was prepared by using amla pulp, jaggery and ghee. Three variations of Halwas were developed by incorporating amla pulp with jaggery and ghee. The study concludes that out of two variations of Amla lollipops, the Amla lollipops made by jaggery was more acceptable, than the lollipops made from sugar. Amla halwa was prepared with 3 variations such as sample 1 [Amla 48%, Jaggery 48%], sample 2 [Amla 50%, Jaggery 45%], sample 3 [Amla 42%, Jaggery 52%], In this the sample 3 which was prepared with 42% of Amla and 52% of Jaggery was more acceptable than sample 1 and 2 according to sensory evaluation.

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