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Organoleptic rating of RTS prepared from pulp of Bael cultivars

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Abstract

Bael (*Aegle marmelos* Correa.) is a nutritive and medicinally important fruit and also known as bilvpatra, beel, shriphal and Bengal quince. Fruit is eaten as fresh and also used for making several value added products. All the parts of the bael tree *viz.* stem, bark, root, leaf, flowers, seed oil or fruits of any stage of maturity and ripen are used for preparation of *Ayurvedic* medicines and it is major constituent of *Dashmool*. The fruit is generally available from March to May month. Important aspect of fruit is therapeutic and neutraceutical value, which could safeguard stomach ailments and improve health of rural populations. The bael pulp is used as a base of various products like squash, jam, toffee, slab, powder, nectar, beverage, RTS, etc. Bael fruit pulp of cultivar NB-5, CISH Bael-2 and Goma Yashi was used to make ready to serve drink by adding sugar @ 700g/l of pulp or juice. This RTS was further diluted with water in 30:70 for sensory evaluation to assess the quality of products. Organoleptic score indicated that ready to serve drink varied among pulp of bael varieties and RTS prepared from pulp of Goma Yashi was found better by getting highest score than other varieties. The utilization of bael fruits pulp for preparation of delicious drink has been discussed in this paper.

Key words: Bael, *Aegle marmelos*, RTS, fruit pulp, value addition

Introduction

Bael (*Aegle marmelos* Correa.) is an important fruit tree for semi arid and hot arid regions of the country. Bael fruit is a highly nutritious and favorite fruit throughout the country because of its medicinal and neutraceutical value. Besides eaten as fresh, many products like jam, squash, candy, nectar, jam, slab, beverages, powder, RTS, etc. are prepared from fruits (Singh and Roy,1984; Singh *et al*, 2011).This fruit can supplement the dietary needs of the rural people, where very less nutritious fruit is available. Sometimes the pulp diluted with water and added with requisite amount of sugar and tamarind, forms a delicious drink. Analysis of the fruit gave the following values: 61.5g moisture, 1.8 g protein, 0.39 g fat, 31.8 g carbohydrates, 1.7 g minerals, 55 mg carotene, 0.13 mg thiamine, 1.19 mg riboflavin, 1.1mg niacin and 8.0 mg vitamin C per 100 g of edible portion (Gopalan *et.al.*, 1985). In India, bael fruits are matured after 10-11 month of flowering and harvested during mid March to May. If fruits are left on the trees beyond ripening, these may get spoiled due to high temperature, monsoon rains and humidity. Normally the storage life of bael fruit is less hence, fresh fruit have to be processed in to value added products or pulp should be preserved. The fruit weight vary from 200g to 4000g and bigger size fruits can be successfully utilized for drying of pulp for preparation of ready to serve drink. It can also be stored for long period by adding preservatives. Bael fruit has been in use from time immemorial in traditional medicine for relieving constipation, diarrhea, dysentery, peptic ulcer, and respiratory infections. In recent times, to make better use of fruits there has been a renewed interest in the bael as a main component in ayurvedic preparations, health food, beverages and delicious drink, etc (Singh *et al*, 2012). In India, limited work has been carried out on post harvest management for proper utilization of bael fruits. Keeping in view, an attempt was made to utilize bael varieties fruits pulp for preparation of delicious drink to assess the quality parameters.

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Materials and Methods

The experiment was carried out in Plant Physiology Laboratory, CIAH, Bikaner during the year 2013 using fruits of bael cultivars Goma Yashi, NB-5 and CISH Bael -2 . The fruits were procured from Central Horticultural Experiment Station, CIAH, Godhra, Gujarat during April, 2013. Before extraction of pulp; data on morphological characters of fruits were recorded. Fruits were cleaned with water and then shell was broken in to pieces. Seeds were removed manually from pulp. Pulp was properly meshed with small quantity of water and fibre was removed from pulp. The ready to serve drink was prepared in the last week of May, 2013. Sugar was added @ 700g per litre of pulp to make ready to serve drink and to maintain

TSS (14.0- 14.5 °Brix). Further, ready to serve drink was diluted with water in the ratio of 30:70 for organoleptic test.

Organoleptic testing was carried out on the day of preparation with a panel of ten judges on score basis (maximum 10 marks). TSS of the drink was monitor by Digital hand refractometer before sensory evaluation. Hedonic scale method was used for the organoleptic evaluation of drink prepared for colour, flavour, acceptability and taste characters. The mean data of score was assessed for sensory evaluation of ready to serve drink of bael varieties fruits.

Results and Discussion

The mean data on physical characters of bael varieties fruit is given in Table-1. At maturity stage, the colour of fruit was yellow in both NB-5 and CISH B-2 varieties while it was yellowish green in Goma Yashi. It is early maturing variety producing sweet fruits in taste. The weight of fruit was higher in Goma Yashi than other varieties. The fruit weight vary from 1.0 to 1.6kg(Singh *et al*, 2012). The skull thickness was higher in NB-5 and CISH Bael -2 followed by Goma Yashi cultivar. However; there were no remarkable differences in TSS and number of seed locules/fruit. It was noticed that number of seed was more in NB-5 followed by Goma Yashi . The less number of seed was observed in CISH Bael -2. Variation in fruit size, skull thickness, number of seeds, mucilage content has been observed in other varieties (Ram and Singh, 2003), it may possibly be due to genetic features of the varieties and growing environment. In wild bael fruits, more number of seeds is found in comparison to improved ones. Moreover, mucilage content was more in CISH Bael -2 than other varieties which may due to genetic make up.

Table1. Physico-chemical characteristics of bael varieties fruits.

Characters	Goma Yashi	N.B.-5	CISH Bael -2
Colour	Yellowish green	Yellow	Yellow
Fruit weight (kg.)	1.30	0.610	0.835
Length x width (cm.)	15.6 x 12.6	9.84 x 10.6	16.7 x 10.2
Specific gravity	0.95	0.86	0.86
Skull thickness(mm)	1.51	1.86	1.84
No of seed locules	14	16	13
No. of seed /fruit	71	85	41
Weight of seed (g.)	26		
Fibre weight/fruit(g)	40-50		
TSS (^{0}brix)	37.7	36.8	38.7
Titratable acidity (%)	0.28	0.34	0.41

Data presented in table -2 showed that ready-to-serve drink prepared from pulp of Goma Yashi was highly acceptable by the panel of judges on score basis. The appearance of product was attractive in packed glass bottle at fresh stage of testing. The appearance of RTS of Goma Yashi was yellowish getting maximum score (6.90) followed by NB-5 (6.50). The minimum score (5.80) was recorded with RTS prepared from cv. CISH Bael -2. The appearance was light yellow in colour.

The colour of product is an important character of any value added product. The initial colour of product was yellowish and attractive. There was no artificial colour mixed in the drink as pulp retains the natural yellow-reddish colour. The maximum scores (7.10) for colour was observed in Goma Yashi followed by others (Table 2). The colour of product was good in case of NB-5 than CISH Bael-2. The minimum score was obtained in CISH Bael -2 which showed the poor pulp colour than other varieties.

Table 2. Sensory evaluation of RTS prepared from bael varieties fruits.

Characters	Goma Yashi	N.B.-5	CISH Bael- 2
Appearance	6.9	6.5	5.8
Taste	7.0	6.2	5.1
Flavour	7.8	5.6	5.2
Sweetness	8.5	7.0	5.3
Colour	7.1	6.7	5.3
Acceptability	7.3	6.3	5.1
TSS (^{0}brix)	14.6	14.5	14.8

The maximum score of ready to serve drink was obtained for sweetness (8.5) followed by flavour (7.8) and acceptability characters (7.3). In sensory evaluation, taste is very important factor after colour and flavour. The highest score (7.30) was ranked for acceptability character followed by (6.30) in NB-5 (Table -2).The minimum score (5.10) was given by tasters for CISH Bael -2 variety which may possibly be due to poor taste sensation because of high titratable acid content in fruits (0.41%). The study is similar with the earlier findings on sensory evaluation of ready to serve drink prepared from date juice (Godara and Pareek, 1985).

The maximum mean score (7.0) of taste character was in Goma Yashi than NB-5 and CISH Bael-2 and this trend was similar for other characters. This may possibly be due to variation in the quality characters of fruits. The finding is similar with the characters reported by Singh *et al.*, (2011). However, poor score was obtained for maximum character in CISH bael -2 because of poor taste sensation among the tasters.

The sensory evaluation of RTS was indicative of high acceptance of Goma Yashi varieties. By this way, ripe bael fruits particularly big size can be utilized for making pulp for preparation of delicious drink. The score of acceptability and taste characters indicated that the ready to serve drink can be a better value added product of bael fruits because of its curative properties. However, this technique provides the growers an ample scope to utilize their produce profitably in arid and semi arid regions.

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