

## Study on development of custard apple carbonated beverage

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**SUMMARY :** The demand for high quality food products is growing rapidly these days. A natural taste and a fresh like quality are highly appreciated. Custard apple carbonated beverage was prepared. The physico-chemical characteristics and organoleptic quality of carbonated beverages was evaluated. The chemical composition of custard apple pulp was carried out and it was found that pulp was source of carbohydrates 23.9 per cent and good source of protein 1.6 per cent. The nutritive value of custard apple carbonated beverages showed that it was good source of carbohydrates (12.9%), protein (0.7%) and fat (0.18%).

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The custard apple (*Annona squamosa*) is one of the important dry land fruit grown in waste land on rain water cultivated throughout the country. A relatively less moist soil and temperature, environment will yield the custard apple fruit with good nutritional constituent. In India the term custard apple is ordinarily applied to sharifa or sitaphal. It is also called as sugar apple. The fruit has pleasant texture and flavour and is sweet with slight acidity. Food value lies mainly due to sugar content which is about 12.4-18.15 per cent and protein 1.6 per cent. Beverages are now days consumed throughout the world in day to day life. These beverages are categorised into two groups as synthetic beverage and natural beverages. Synthetic beverages contain ingredients which are non natural like artificial sweeteners, colours, flavours etc. and these ingredients may affect health. Natural beverages contain naturally available or extracted ingredient like fruit juices, colour etc.

The fruit beverages are divided mainly as non

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carbonated and carbonated fruit beverages. Carbon dioxide used in carbonated beverages is colourless, non toxic, slightly pungent gas. Carbon dioxide provides beverages with their unique taste and flavour and also gives protection against bacterial spoilage during storage. Almost all carbonated drinks (sweetened aerated waters) contain synthetic colouring and flavouring agents and these are allergenic. If fruit juices are added to these sweetened aerated waters, they not only impart nutrition but there is no need of synthetic additives. Considering the importance of fruit juices for carbonated drinks, experiment was conducted for development of custard apple carbonated beverage.

### EXPERIMENTAL METHODS

Good quality fully riped custard apple was procured from local market of beed. Physico-chemical characteristics of custard apple, custard apple pulp and carbonated custard apple beverages were determined. Per cent juice and per cent seeds were calculated on the basis of total weight of fruits.

#### Total soluble solids and pH:

Total soluble solids was determined by using Abbes refractometer and pH by using pH meter .

#### Total acidity:

Total acidity was determined by titration method (Ranganna, 1986).

**Total reducing and non reducing sugar:**

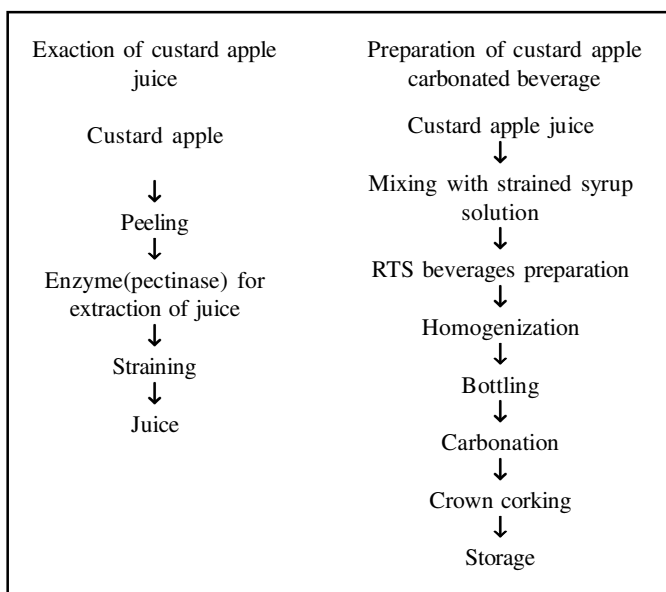
The reducing sugar was estimated by dinitrosalicylic acid method (DNS) and total sugar was estimated by using phenol sulphuric acid method.

**Protein:**

Protein estimation was done by microkjeldal method (A.O.A.C, 1990).

**Organoleptic evaluation:**

The organoleptic acceptability was determined by a panel of semi trained judges. The carbonated custard apple beverage was evaluated for quality attributes such as colour, flavour, taste, appearance and overall acceptability by using 9 point hedonic scale.



Basic ingredients for custard apple carbonated beverage

Custard apple pulp	100 g
Sugar	100 g
Water	90 ml
Citric acid	3 g

**EXPERIMENTAL FINDINGS AND ANALYSIS**

Data presented in Table 1 indicate that the average weight of greenish yellow coloured custard apple fruit was about 168 g, with the average length of 5.4 cm, and breadth of 4.3 cm. The no. of seeds were 26, the weight of peel was 82.44 g, and weight of pulp was 85.44 g. The per cent juice was of 30.58 per cent and the waste index was 58.42 per cent.

**Table 1: Physical characteristics of custard apple fruit**

Sr. No.	Physical parameters	Result
1.	Colour of fruit	Greenish yellow
2.	Weight of fruit (g)	168 g
3.	Weight of peel (g)	82.56 g
4.	Weight of pulp (g)	85.44 g
5.	Length of fruit (cm)	5.4 cm
6.	Breadth of fruit (cm)	4.3 cm
7.	No. of seeds	26
8.	Waste index (%)	58.42 %
9.	Juice (%)	30.58 %

Weight, length, breadth, of fruit may vary according to climatic conditions and form of fruit. If less the percentage of peel then the percentage of pulp will be more and vice-versa.

**Chemical characteristics of custard apple:**

As custard apple contains ingredients as so presented in Table 2 it increased the nutritive value of custard apple bar. Acidity of custard apple increased on long storage with change in colour and appearance also.

**Table 2 : Chemical composition of custard apple fruit**

Sr. No.	Chemical parameters	Content %
1.	Moisture	73.3
2.	Protein	1.6
3.	Fat	0.3
4.	Minerals	0.7
5.	Edible portion	28-55
6.	Carbohydrates	23.9
7.	Acidity	0.26-0.65

The nutritional composition of custard apple carbonated beverages has been presented in Table 3.

**Table 3 : Nutritional composition of custard apple carbonated beverages**

Sample Code	T.S.S.	Acidity	Protein	Carbohydrates	Fat	Reducing sugar
A	13°Bx	0.45%	0.7%	12.9%	0.18%	1.1%
B	15°Bx	0.60%	0.8%	16.6%	0.2%	1.4%

where, A=Custard apple carbonated beverages, B=Control sample

The sensory evaluation of custard apple beverages was also carried out which is presented in Table 4.

**Table 4 : Sensory evaluation of custard apple carbonated beverages**

Sample	Colour	Appearance	Taste	Texture	Flavour	Aftertaste	Overall acceptability
A	8	8	7	8	7	7	7
B	9	9	8	8	9	8	9
Mean	8.5	8.5	7.5	8	8	7.5	8
S.E +/-	0.20	0.17	0.15	0.096	0.12	0.15	0.12
C.D.	0.191	0.189	0.190	0.192	0.196	0.190	0.196

Where, A=Custard apple carbonated beverages, B=Control sample

### Conclusion:

The result obtained with respect to the present studies are summarized and concluded as follows:

The main objective for carrying out this research was to utilize custard apple in the preparation of carbonated beverages to increase nutritional value and accelerate the value addition.

The physico-chemical analysis of custard apple was studied to assess the importance of custard apple in food and beverages.

The chemical composition of custard apple pulp was carried out and it was found that pulp was source of carbohydrates 23.9 per cent and good source of protein 1.6 per cent.

Juice of custard apple was used to improve the quality of custard apple carbonated beverages.

The nutritive value of custard apple carbonated beverages shows that it was good source of carbohydrates (12.9%), protein (0.7%), fat (0.18%). It is superior to other synthetic drinks.

### LITERATURE CITED

- A.O.A.C. (1990). *Official methods of analysis* 15<sup>th</sup> Ed. Association of Analytical Chemistry Washington, D.C., USA.
- Bhatia, B.S., Sastry, L.V.L., Krishnamurthy, G.V., Nair, K.G and Lal, G. (1961). Preservation of custard apple (*Annona Squamosa*) pulp. *J.Sci. food agric.*, **12**:529-531.
- James H.Giese (1992). Hitting the spot: Beverages and beverages technology, *Food Technol.*, **46**(7):70-80.
- Kamble, P.B.and Chavan, J.K. (2005). Effects of post harvest treatments and storage temperature on shelf life of custard apple fruits. *Food Sci. & Technol.*, **42**(3):
- Khurdiya, D.S., (1990). A study on fruit juice based carbonated drink, *Indian Fd.Packer*, **44**(6):45-50.
- Ranganna, S.(1995). *Hand book of analysis of quality control of fruits and vegetable products*, ICAR, NEW DELHI (India).

