

Varietal screening of cashew for physical parameters and preparation of ready to serve (RTS) beverage and jam

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ABSTRACT

An experiment was conducted in completely randomized design (CRD) with three replications in the Department of Fruit Science and Horticulture Technology, Orissa University of Agriculture and Technology, Bhubaneswar, Odisha. Fifteen entries were screened for quality analysis. These fifteen cultivars namely K22-1, BPP-6, Bhaskara, Goa-1, Priyanka, Jhargram-1, Vengurla-1, NRCC-2, UN-50, Chintamani-1, BBSR-1, Ullal-3, Ullal-4, Madakkathra-2 and Dhana encountered significant differences in respect of all the characters evaluated. The weight of cashew apple varied from 31.33 (Chintamani-1) to 75.54 g (Priyanka), specific gravity from 0.96 (NRCC-2) to 1.21 (Goa-1), girth of the apple at widest point from 7.39 (Chintamani-1) to 12.64 cm (Goa-1), girth at narrowest point from 4.03 (Chintamani-1) to 10.18 cm (Dhana), the length from 3.79 (Ullal-3) to 6.02 cm (UN-50) and juice from 67.62 (Vengurla-1) to 88.15 per cent (Bhaskara). The value-added products prepared out of the cashew apple like ready to serve (RTS) beverage and jam showed significant differences in consumer preference with respect to organoleptic qualities. Variety Dhana scored highest followed by BBSR-1, NRCC-2 and Priyanka in the form of RTS for flavour (smell and taste) whereas in case of jam the cultivar NRCC-2 scored maximum followed by Ullal-3 and Bhaskara.

Keywords: Cashew varieties; weight, girth; specific gravity; colour; RTS; jam

INTRODUCTION

The cashew (*Anacardium occidentale* L) among other plantation crops of India is known to provide high economic returns because of the foreign exchange earnings obtainable from the export of raw or processed cashew nut. Cashew apple juice has been found to contain the highest amount of vitamin C (203.5 mg/100 ml of edible juice) which is almost four times the amount of vitamin C found in popular citrus fruits and more than four times than in other fruits. Hence when cashew apple is blended with other tropical fruits it boosts their nutritional quality. Considering the fact that cashew apple is harvested over a period of 4-5 months during a year its use as a raw material for a variety of fruit-based products can trigger revolution in cashew industry.

Cashew apples contain 85 per cent juice 10 per cent of which is sugar (Sobhana et al 2013) for which it tastes sweet and nutritious. Neither the

cashew apples nor the juice extracted from the fruits is completely utilized in India despite its nutraceutical properties. As a result large amounts of cashew apples are being wasted in the field itself after nut separation. The other problems associated with the cashew apple utilization are short shelf-life, fungal decay, shrinkage of skin etc. Feni is a popular beverage from cashew apple but several other products like juice, jam, jelly, pickle, squash, RTS, candy etc can also be prepared. Cashew apple is converted into various products such as jam, syrup, vinegar, candies, alcoholic beverages etc and the pomace is utilized as animal feed (De Oliveira and Barros 2009). Azam-Ali and Judge (2001) reported that only 6 per cent of cashew apple production is exploited in India and the rest gets rotten and wasted in situ. In order to explore their full potential knowledge of their quality, spoilage, processing and preservation methods is essential. Hence keeping in view the above facts regarding importance and scope of cashew apple utilisation this study was undertaken.

MATERIAL and METHODS

The experiment was conducted in the Department of Fruit Science and Horticulture Technology, Orissa University of Agriculture and Technology, Bhubaneswar, Odisha in 2014-15. The good quality fallen and ripe cashew apples were collected on the same day randomly from different replications of the experimental site and kept separately in the labelled bags after removal of nuts.

The fresh fruits were washed carefully twice under the running tap water. For physical observation the colour of well-ripened apples was recorded by naked eye estimation. Ten apples from each variety were randomly selected and the weight, length, girth at widest point, girth at narrowest point and specific gravity were recorded. Juice was extracted from the apples to which potassium metabisulfite (KMS), citric acid and polyvinylpyrrolidone (PVP) were added; kept overnight; tannins were removed and stored in well-sterilized air tight new plastic bottles for future use. Ready to serve (RTS) beverage from the juice and jam from processed apple pulp were prepared and got evaluated from a panel of judges on 9-point hedonic scale to decide the best cultivar with organoleptic acceptance.

RESULTS and DISCUSSION

Data on physical characters of cashew apple are given in Table 1. The highest apple weight was recorded in cultivar Priyanka (75.54 g) followed by Dhana (71.59 g) and UN-50 (65.37 g) which were at par with each other and the least was observed in the cv Chintamani-1 (31.33 g).

Significant variation in apple length was seen. A maximum of 6.02 cm length was observed in UN-50 and minimum of 3.79 cm in Ullal-3. Girth at widest point was highest (12.64 cm) in Goa-1 and lowest (7.39 cm) in Chintamani-1. Girth at narrowest point was minimum (4.03 cm) in Chintamani-1 and maximum in Dhana (10.18 cm) and NRCC-2 (10.13 cm). The specific gravity of the tested fifteen varieties was found to be more or less one with the lowest (0.96) in NRCC-2 and the maximum (1.21) in Goa-1.

Similar observations were also made by Aravindakshan et al (1986), Kumar and Aravindakshan (1985) and Lenka et al (1988).

The RTS prepared from cv Dhana scored 7 on hedonic scale (like moderately) followed by BBSR-1, NRCC-2, Madakkathra-2, Priyanka and Bhaskara cultivars which scored 6 (like slightly) (Table 2). The

Table 1. Weight, length, girth at widest point, girth at narrowest point and specific gravity of cashew apple varieties

Variety	Weight (g)	Length (cm)	Girth at widest point (cm)	Girth at narrowest point (cm)	Specific gravity
K22-1	52.00	4.79	10.34	7.57	1.16
BPP-6	32.67	4.97	10.14	7.50	1.19
Bhaskara	63.00	5.51	11.04	9.06	1.14
Goa-1	60.83	4.55	12.64	9.10	1.21
Priyanka	75.54	5.66	12.31	9.52	0.98
Jhargram-1	49.33	4.88	12.52	9.46	1.09
Vengurla-1	34.83	4.29	11.51	8.48	1.18
NRCC-2	52.83	4.94	12.42	10.13	0.96
UN-50	65.37	6.02	11.83	8.55	1.15
Chintamani-1	31.33	3.85	7.39	4.03	1.06
BBSR-1	45.81	4.97	8.49	7.76	1.11
Ullal-3	53.11	3.79	9.74	7.17	1.18
Ullal-4	49.18	5.05	10.74	8.03	1.01
Madakkathra-2	52.09	3.96	11.13	9.49	1.06
Dhana	71.59	4.67	10.69	10.18	1.14
SEm±	2.690	0.348	0.803	0.616	0.044
CD _{0.05}	8.29	1.07	2.47	1.90	0.13

Table 2. Colour of mature cashew apple of fifteen varieties and sensory quality evaluation of cashew RTS and Jam on a 9-point Hedonic scale

Variety	Mature cashew apple colour	RTS		JAM	
		Scale (point)	Taste (liking)	Scale (point)	Taste (liking)
K22-1	Reddish yellow	5	Neither like nor dislike	4	Dislike slightly
BPP-6	Yellow	4	Dislike slightly	6	Like slightly
Bhaskara	Reddish yellow	6	Like slightly	6	Like slightly
Goa-1	Yellow	3	Dislike moderately	5	Neither like nor dislike
Priyanka	Reddish yellow	6	Like slightly	6	Like slightly
Jhargram-1	Yellow	5	Neither like nor dislike	6	Like slightly
Vengurla-1	Yellow	4	Dislike slightly	6	Like slightly
NRCC-2	Reddish yellow	6	Like slightly	7	Like moderately
UN-50	Reddish yellow	5	Neither like nor dislike	4	Dislike slightly
Chintamani-1	Reddish yellow	5	Neither like nor dislike	3	Dislike moderately
BBSR-1	Red	6	Like slightly	6	Like slightly
Ullal-3	Red	5	Neither like nor dislike	6	Like slightly
Ullal-4	Yellow	3	Dislike moderately	6	Like slightly
Madakkathra-2	Red	6	Like slightly	2	Dislike very much
Dhana	Red	7	Like moderately	7	Like moderately

cv Goa-1 had a score of 3 (dislike moderately). During organoleptic evaluation cv Dhana and NRCC-2 scored 7 (like moderately) followed BPP-6, Bhaskara, Priyanka, Jhargram-1, Vengurla-1, BBSR-1, Ullal-3 and Ullal-4 which scored 6 (liked slightly). However cv Madakkathra-2 scored only 2 (dislike very much) because of slight astringent taste compared to other cultivars.

It was concluded that varieties Dhana, NRCC-2 and BBSR-1 can be considered as processing varieties for preparation of preserved products like RTS beverage and jam.

REFERENCES

- Aravindakshan K, Celine VA, Balakrishnan S and Veeraghavan PG 1986. Studies on certain physico-chemical attributes of apple and nuts of selected cashew types. *Cashew Causerie* **8(4)**: 5-8.
- Azam-Ali SH and Judge EC 2001. Small-scale cashew nut processing. <http://www.fao.org/ag/ags/agsi/Cashew/Cashew.htm>.
- De Oliveira VH and Barros LM 2009. Cashew world and perspectives- cashew apple usages. *Proceedings, 4th Annual ACA Conference on Value and Efficiency Abidjan, Cote d'Ivoire, 1-3 September 2009*, pp 4-5, 17-18.
- Kumar GK and Aravindakshan M 1985. Studies on some qualitative aspects of cashew apple. *Indian Cashew Journal* **17**: 19-21.
- Lenka PC, Mohapatra KC, Mishra NK and Dash S 1988. Studies on apple characters of cashew types and its physico-chemical characters. *Orissa Journal of Horticulture* **20**: 20-24.
- Sobhana A, Mathew J, Mini C and Pushpalatha PB 2013. Technologies for cashew apple utilization on commercial scale. *Souvenir, National Conference on Cashew, 20-21 November 2013*, pp 65-71.