

**Research Note :**

## STUDIES ON PROCESSING AND STORAGE STABILITY OF AONLA (*Emblica officinalis* Gaertn) RTS

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**ABSTRACT** : Aonla plays an important role in human nutrition. The fruits are not consumed freely in fresh form because of its astringent taste. But the excellent nutritive and therapeutic values of fruits have great potentiality for processing in to various quality products. In present study different recipes of Aonla ready to serve (RTS) was standardized to explore the processing potential of Aonla. There were five different possibilities of recipes. The RTS prepared from the recipes 10% pulp, 12% TSS and 0.30% acidity gave highest organoleptic quality score followed by RTS prepared from 10% pulp, 10% TSS and 0.30% acidity and the quality of the prepared RTS was maintained up to fourth month at ambient temperature.

**Keywords** : Aona, RTS, recipe, storage, stability.

Aonla (*Emblica officinalis* Gaertn) occupies an important place among indigenous medicinal fruits of India. It is one of the richest sources of vitamin C. The deficiency of vitamin C causes various diseases such as scurvy, megaloblastic, anaemia, rough skin, failure of wound healing etc. Therefore, aonla plays an important role in human nutrition. The fruits are not consumed freely in fresh form because of its astringent taste. But the excellent nutritive and therapeutic values of fruits have great potentiality for processing in to various quality products, which can get position in national and international market? Keeping the above points in view this research problem was designed to find out a nutritious aonla soft drink of consumer acceptability.

Aonla fruits, free from bruises and white spot, were harvested randomly from different plants of orchard. Twenty fruits replicated five times were used for assessing the physical characteristics (Table 2). The pulp obtained from 100g fruit replicated three times was subjected to chemical analysis (Table 3). The pulp was obtained by heating the fruits in water, removal of the seeds and grinding the segments by adding water in the ratio of 1:1 RTS was prepared according to the flow

diagram (Fig.1) by incorporating five different recipes (Table 1) each with three replications.

Fruit pulp Straining Mixing with syrup according to recipe Straining & cooling it Addition of preservative according to recipe Bottling Crown Corking a Pasteurization for 20 minutes Cooling Labeling Storage at ambient temperature.

**Fig.1: Flow diagram for preparation of Aonla RTS.**

**Table 1 : Recipes explored for aonla RTS preparation.**

Treatments	Pulp (%)	TSS (%)	Acidity (%)
T <sub>1</sub>	10	10	0.30
T <sub>2</sub>	10	13	0.30
T <sub>3</sub>	12	11	0.25
T <sub>4</sub>	10	12	0.30
T <sub>5</sub>	13	12	0.28

After that it was subjected to organoleptic evaluation (Table 4). RTS prepared from ideal treatments was analyzed for chemical parameters initially and at an interval of one month up to fifth month of storage period (Table 5).

The TSS was estimated by hand refractometer. The acidity was determined by method of simple acid base titration method using phenolphthalein as

indicator. The ascorbic acid content in the samples were measured by reduction of 2,6 Dichlorophenol indophenol dye as given by Ranganna (7). The reducing and non-reducing and total sugars were estimated by Lane and Eynon (5). Non-enzymatic browning was estimated by the method of Ranganna (7). The organoleptic evaluation of RTS prepared under different treatment was carried out by a panel of six judges using be Doric rating scale given by Amerine et al. (1). The analysis of variance of the date was carried out by the technique as described by Raghuramula et al. (6).

Table 2 and 3 indicated the physical characters and chemical composition of the Aonla fruits.

**Table 2: Physical characters of aonla fruits.**

Characters	Average Value
Average weight (g)	38.25
Volume (ml)	93.25
Specific gravity (g/cc)	0.410
Overall length (cm)	3.40
Maximum width (cm)	3.60
Juice content (%)	98.25
Sphericity (%)	98.94
Bulk density (kg/m <sup>3</sup> )	108
lparTrue density (kg/m <sup>3</sup> )	210
Moisture content (%)	84.5

**Table 3: Chemical composition of aonla fruits.**

Characters	Average Value
Total Soluble Solids (%)	5.96
Total Titrable acidity (%)	1.27
Ascorbic acid (mg/100g)	330.24
Reducing Sugar (%)	2.63
Total carbohydrates (%)	14.00

From the above results it is concluded that the organoleptic score of recipe no.4 containing 10 per cent pulp, 12 per cent TSS and 0.3 per cent acidity was found to be the best followed by recipes no.1 containing 10 per cent pulp, 10 per cent TSS and 0.3 per cent acidity. Both the recipes are significantly different from each other.

**Table 4: Organoleptic quality of different recipes of aonla Ready-to-Serve.**

Recipe No	Pulp (%)	TSS (%)	Acidity (%)	Organoleptic quality	
				Score	Rating
1	10	10	0.30	7.31	Liked moderately
2	10	13	0.30	7.23	Liked moderately
3	12	11	0.25	6.31	Liked slightly
4	10	12	0.30	8.56	Liked very much
5	13	12	0.28	7.21	Liked moderately
C.D (P=0.05)				0.27	

Studies on changes during storage of Aonla RTS indicated that TSS increased slightly after three month of storage. It may be due to the conversion of polysaccharides in to sugars. Similar observation was recorded by Khurdiya (4) in phalsa beverages. Total acidity of RTS did not change up to two months of storage, then gradually increased the acidity of fruit products, (Conn and Stumpf, 3). The present findings are also in agreement with the observation of Ashraf (2) and Singh (10). Results indicated that ascorbic acid content of the RTS beverage decreased continuously during the entire period of storage. The reduction may be due to oxidation of ascorbic acid in to dehydroascorbic acid by oxygen. Roy and Singh (8) and Singh (10) had also reported losses of ascorbic acid in fruit beverages during ambient storage. In the present study browning of squash increased continuously throughout the entire period of storage. It may be due to non-enzymatic reactions, which occurs between nitrogenous compounds with sugar or organic acids with sugars. Increase in browning was also observed by Siddappa et.al. (9). Reducing sugars increased continuously and total carbohydrate decreased continuously. The organoleptic scores of RTS decreased gradually during storage it at room temperature. The acceptability of squash was maintained up to fourth month. Similar findings were observed in different beverages by several workers.

Thus it may be concluded that RTS prepared

**Table 5: Changes in chemical characters during storage of ideal recipes of aonla RTS.**

Characters	Storage period in months						
	0	1	2	3	4	5	6
TSS %	12.00	12.00	12.00	12.00	12.50	13.50	13.25
Acidity %	0.30	0.30	0.30	0.31	0.32	0.32	0.34
Ascorbic Acid (mg/100g)	308.74	300.00	289.00	268.00	252.00	241.00	238.00
Browning (O.D)	0.020	0.020	0.021	0.022	0.024	0.027	0.030
Reducing Sugar %	8.45	8.52	8.58	8.64	8.68	8.74	8.79
Total carbohydrate (%)	17.20	17.17	17.17	17.09	17.06	17.01	17.00
Organoleptic quality	8.56	8.42	7.78	7.64	7.24	6.77	6.74

from the recipe containing 10% pulp, 12% TSS and 0.30% acidity contain best eye appeal, flavours, consistency, taste and nutritious as compared to the other recipes, and it may play an important role in food and nutritional security.

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