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## Studies on evaluation of Aonla varieties (*Emblca officinalis* Gaertn.) under semi arid condition of Eastern U.P.

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### Abstract

The variability examined in physico-chemical composition of aonla cultivars indicated the possibility of selecting a variety or cultivars suitable for processing the aonla fruits. 'Narendra Aonla 6' recorded lowest content of fiber, higher content of pulp and total soluble solids with moderate fruit size and ascorbic acid content while 'Narendra Aonla-7' showed average physico-chemical composition with higher content of ascorbic acid. These varieties have also higher productivity and free from necrosis or internal browning, hence they seem to be Ideal varieties for processing.

**Keywords:** Aonla varieties, semi arid condition and aonla cultivars

### Introduction

Indian goose berry (*Emblca officinalis* Gaertn.) known as aonla belongs to family Euphorbiaceae is one of the most important fruits indigenous to India. It is probably the only fruit to fill the gap of astringent food. It is recommended by Ayurvedic and unani systems of medicine for balanced diet and sound health. Fruit is sour and astringent hence, not popular as table fruit. The excellent nutritive and the therapeutic values of fruit have great potential for processing into number of quality products for processing into number of quality products. In recent years several new varieties of aonla have been evolved with good characteristics. Keeping these points in view the present study was undertaken to evaluate the physico-chemical composition of six aonla varieties for products suitability.

### Materials and Methods

The present investigation was carried out in the department of horticulture, N.D. University of Agriculture and Technology, Faizabad during 2016-17. Fourteen years old budded trees of five aonla cultivars or growing at experimental orchard of the department were selected for studies. One tree was taken as a unit or a cultivar and it was replicated five times following randomized block design. In each tree one hundred fruits were tagged at fruit set to get uniform material for studies. One kg mature fruits from each tree were harvested for assessing the physico-chemical composition. Data on physical characters viz., average fruit weight seed (stone) fibre and pulp percentage were collected as per AOAC [1] methods. The total soluble solids were determined with the help of hand refractometer. Total acidity and ascorbic acid contents in the pulp were determined by titrating juice against 0.1 N NaOH and 2, 6-dichloropenol indophenols dye solution. Total phenol in the pulp was estimated by the method of Swain and Hills [7] and expressed as total percent phenol.

### Result and Discussion

In the present finding the physical composition of aonla varieties indicated variability in average fruit weight, per cent fibre, seed and pulp content (Table-1) Variety NA-10 has the maximum fruit weight followed by NA-7 and NA-6. The reference in fruit weight of these varieties where no significant, Kanchan recorded the lowest fruit weight. Little variation was observed in the pulp content of aonla varieties. Fibre content was lowest (0.87%) in NA-6, Whereas Chakaiya has the highest fibre content (1.93%). The seed (stone) content varied from 4.46% to 6.22% Chakaiya recorded the lowest value followed by NA-6, Kanchan showed the highest content of the seed. Singh and Arora [6] reported that Banarasi has bigger size fruit and higher per cent of edible portion.

Studies on chemical composition of aonla varieties showed a range of variability in total soluble solids (9.44 to 11.12 per cent), acidity (1.72 to 2.26 per cent) ascorbic acid (603.64 to 733.60 mg/100g pulp) and total phenols 172.76 to 188.93 mg/100g pulp) (Table 2).

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Among the varieties chakaiya recorded lowest TSS (9.44%). The difference in TSS content of the varieties however not very high. The highest acid content was recorded with Chakaiya, whereas kanchan has the lowest value. There is hardly any difference in acid content among the remaining varieties. Singh and Pathak<sup>[5]</sup> reported the range of TSS from 9.5 to 11.8 per cent and Sharma *et al.*<sup>[3]</sup> observed the range for acidity from 1.78 to 1.90 per cent in pulp of the aonla varieties.

**Table 1:** Physical composition of aonla varieties.

Varieties (%)	Av. Fruit wt. (%)	Pulp (%)	Fiber (%)	Seed (%)
NA-6	41.40	94.27	0.87	4.86
NA-7	42.90	92.97	1.33	5.70
NA-10	44.84	93.57	1.30	5.13
Kanchan	30.92	92.36	1.40	6.24
Chakaiya	35.82	93.61	1.93	4.46
CD at 5%	4.26	0.97	0.31	0.96

**Table 2:** Chemical composition of aonla varieties.

Varieties (%)	TSS (%)	Acidity (%)	Ascorbic acid (Mg% 100g)	Phenols (mg%100g)
NA-6	11.12	1.80	641.27	172.76
NA-7	10.96	1.95	733.63	185.10
NA-10	10.14	1.82	626.82	188.93
Kanchan	10.86	1.72	603.64	189.97
Chakaiya	9.44	2.26	655.64	179.35
CD at 5%	1.04	0.52	36.38	12.76

The variety NA-7 recorded the highest ascorbic acid content (733.63 mg/100g pulp) where Kanchan has the lowest content. The total phenols were found to be the lowest (172.76 mg/ 100g pulp) in the pulp of NA-7 among the varieties. Sharma and Singh<sup>[4]</sup> reported the range for ascorbic acid from 500 to 750 mg/100g pulp and Pathak<sup>[2]</sup> reported the range of 162.53 to 175.74 mg/100g pulp for total phenols. The reported values for chemical composition are very close to present findings. However, the little variation in present and reported value may possibly be due to variety and place. It is evident from the data and foregoing discussions that physico-chemical composition of aonla variety NA-6 showed better attributes for processing of various products of economic importance.

## Reference

1. AOAC. Official Methods of Analysis. Association of Official Analytical chemists, 13th End., Washington. O. C., USA, 1980.
2. Pathak S. Post harvest technology of aonla (*Emblica officinalis* Gaertn.) fruit. Ph. D. thesis, N. D. Univ. of Agril. & Technology, Kumarganj, Faizabad, U. P, 1988.
3. Sharma SS, Sharma K, Yamdagni R. Studies on yield and quality of aonla cultivars (*Emblica officinalis* Gaertn.) under rainfed conditions of Haryana. Res. Rev. Rep. 1989; 6:41-43.
4. Sharma S, Singh S. Fruits lesser known, yet productive. Farmers J. 1982; 2:38-39.
5. Singh IS, Pathak RK. Evaluation of aonla (*Emblica officinalis* Gaertn.) varieties for processing. Acta rtic. 1987; 208:173-177.
6. Singh JR, Arora S. Physico-chemical differences in two varieties of aonla (*Phyllanthus emblica* Linn.) at maturity. Punjab Hort. J. 1967; 7:145-146.

7. Swain T, Hills VE. The phenolic constituents of *Prunus dornestica*. quantitative analysis of phenolic constituents. J Sci. Agri. 1959; 10:63-78.