



# MARUMEGH

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### PROCESSING AND VALUE ADDITION OF AONLA: AN OPPORTUNITY FOR WOMEN ENTREPRENEURS

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#### Introduction

In the present prevailing pandemic situation of COVID-19 since last two years, huge losses in terms of life and all types of businesses has been observed. Many people have lost their jobs or seen their incomes cut. Unemployment rates have augmented across major economies. This is the time to turn challenges into fruitful changes. Small businesses with little investments and more returns is the need of the hour. In this respect aonla processing is an impactful business with greater returns.



**Fig. 1 Aonla fruits**

Aonla processing into value added products involves simple technologies and with a little awareness and know-how, this business can be profitable for many women farmers and entrepreneurs. Aonla when in season is available for meagre cost and farmers are forced to sell their produce even at 5-10 rupees per kg. Hence converting aonla into processed products will not only solve the problem of farmers but will also help in generating new income opportunities. Aonla can be easily processed into many value added products including beverages, confectionary products or any other food items such as pickles or chutneys.

Indian gooseberry (*Emblica officinalis*), commonly known as *amla* or aonla is one of the most important underutilized fruits in India. It belongs to *Euphorbiaceae* family. The area under aonla cultivation in India is around 93000 Ha with the production of 1077 thousand metric tonnes (NHB, 2017-18). It is mainly cultivated in Uttar Pradesh, Maharashtra, Gujarat, Rajasthan, Andhra Pradesh, Karnataka and Tamil Nadu. The plant grows to a medium sized tree that grows in the plains and sub-mountain regions all over the Indian subcontinent from 200 to nearly 2000 meters above sea level.

Aonla is an ancient fruit of Indian origin, which is associated with our tradition, culture and heritage. It has become an important fruit crop of waste lands particularly in the arid and semi-arid regions of the country. Aonla grows on a wide range of soils; however soil that is well drained, deep, fertile and sandy loam with good water holding capacity is the best for its growth. It is an indigenous fruit with extensive adaptability for growing in diverse climatic and soil conditions. Suitable climate ranges from hot tropical plains to humid subtropical mid-elevation hills. It is even raised in arid, semi-arid, coastal and warm temperate weather productively.

Aonla trees are small to medium sized and reach to 1–8 m in height. The branches are not glabrous or finely pubescent, 10–20 cm long, usually deciduous; the leaves are simple, sub sessile and closely set along branches, light green with greenish-yellow flowers. The fruits are spherical, light greenish-yellow, smooth and hard surface, with six vertical stripes or furrows around. It ripens in autumn and the fruits are harvested manually. Its taste is sour, bitter and astringent.

### **Nutritional and medicinal Importance**

Indian gooseberry is a wonder fruit and one of the precious gifts of nature to the mankind. It contributes towards health and longevity. Aonla is a highly nutritious and an important dietary source of vitamins, minerals and amino acids. The fruit contains high amounts of vitamin C. The fruit also contains considerably higher concentration of most minerals and amino acids than many other fruits. Glutamic acid, proline, aspartic acid, alanine are some of the important amino acids present in aonla fruits. High density of ellagitannins such as emblicanin A, emblicanin B, punigluconin, and pedunculagin is present in aonla. Among other polyphenols, substantial amount of flavonoids, kaempferol, ellagic acid, and gallic acid are also found in aonla fruits with documented epidemiological evidences elsewhere.

Aonla has been mentioned as a wonder fruit in *Ayurveda* due to its immense medicinal powers. Aonla has a long ayurvedic history as a therapeutic remedy to treat a broad range of human body disorders. The fruit is also closely connected with Indian system of medicine, as it is used as an ingredient in more than hundred formulations of Ayurveda. In Ayurveda, the fruits of aonla are described as sour, astringent, bitter and pungent with sweet secondary notes. The dried aonla fruits are used for haemorrhages, diarrhoea, and dysentery. Aonla juice when consumed with lemon is used to treat acute bacillary, dysentery and inflamed eyes. Aonla is also helpful in treating haemorrhage, anaemia, colic, acute leprosy, jaundice, and cough, indigestion, asthma when taken in particular concentration and form. History also claims that the consumption of fruit is also associated with long life, healthy and young physical appearance. Fruit decoctions are also helpful in preventing premature greying of hair.

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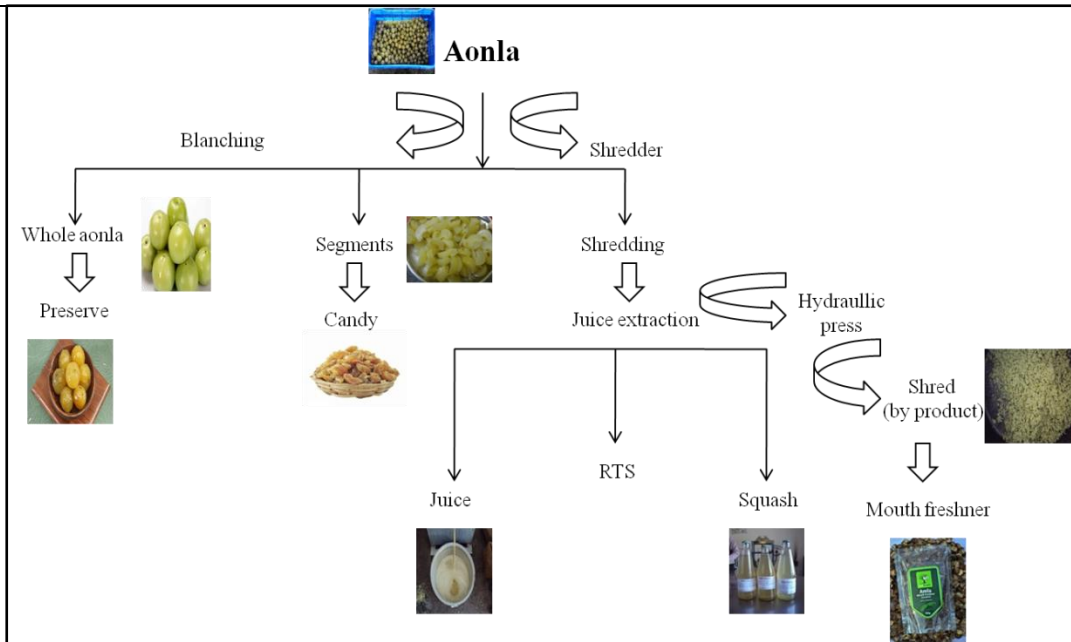
**Important Information about Aonla**

<b>Botanical name</b>	<i>Emblica officinalis</i>
<b>Family</b>	Euphorbiaceae
<b>Common name</b>	Amla, Aonla, Indian Goosberry
<b>Area</b> ('0000ha), 93	<b>Production</b> ('000MT), 1077 (NHB, 2017-18)
Richest natural source of Vitamin C	
<b>Cultivation:</b> Uttar Pradesh, Maharashtra, Gujarat, Rajasthan, Andhra Pradesh, Karnataka, Tamil Nadu	
<b>Harvesting:</b>	
<ul style="list-style-type: none"> <li>• During November-December, however, the fruit may be allowed to remain on the tree till February without much fruit drops.</li> <li>• Optimum stage of harvesting is the second week of December to the week of January in northern plains.</li> </ul>	
Fresh consumption of aonla, 3-5 % only (astringency)	
<b>Varieties:</b> Banarasi, Francis, Chakiaya, Laxmi, Kanchan, NA-7, Chakaiya	
<b>Medicinal Importance:</b> Stomach disorder, diabetes, haemorrhage, diarrhoea, dysentery, anaemia, jaundice, dyspepsia, heart diseases.	

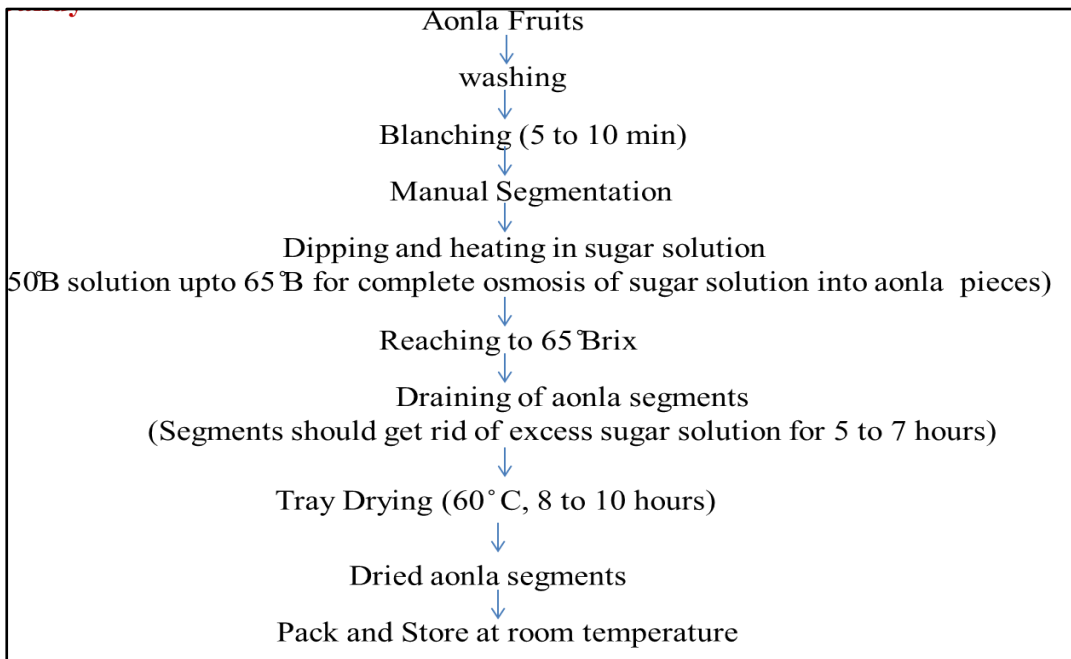
**Value Addition**

Due to rising health concerns, aonla has occupied a special place among the fruits. It is astringent in nature, consumers are hesitant to eat it in raw form. Attempts are being made to produce products which are not only nutritionally rich but also acceptable among large population of all age groups. It is seldom preferred as a table fruit and is not consumed in its raw form due to presence of tannin compounds which makes it astringent and sour. Only 3-5% of the total production of aonla is consumed fresh whereas remaining 95-97% volume is converted into different processed products.

Also, short availability period of aonla makes its processing and value addition obligatory. Various ready to eat products of aonla are available in the market namely; dried aonla, aonla powder, jam, preserve candies, preserves, pickle, chutney, jam, bar, squashes, beverages, laddoo etc (Fig. 2). Among various commercially available products of aonla, its candy and preserve are the most preferred ones among the people of all age groups. Moreover, due to increased concern for healthy and nutritious food, its demand is increasing day by day. The modern methods for preparation of different aonla products are hygienic, consume lesser time and provide maximum retention of nutrients. The processes for preparation of various value added products have been given below.



**Fig. 2 Overview of Value Added Products of Aonla**

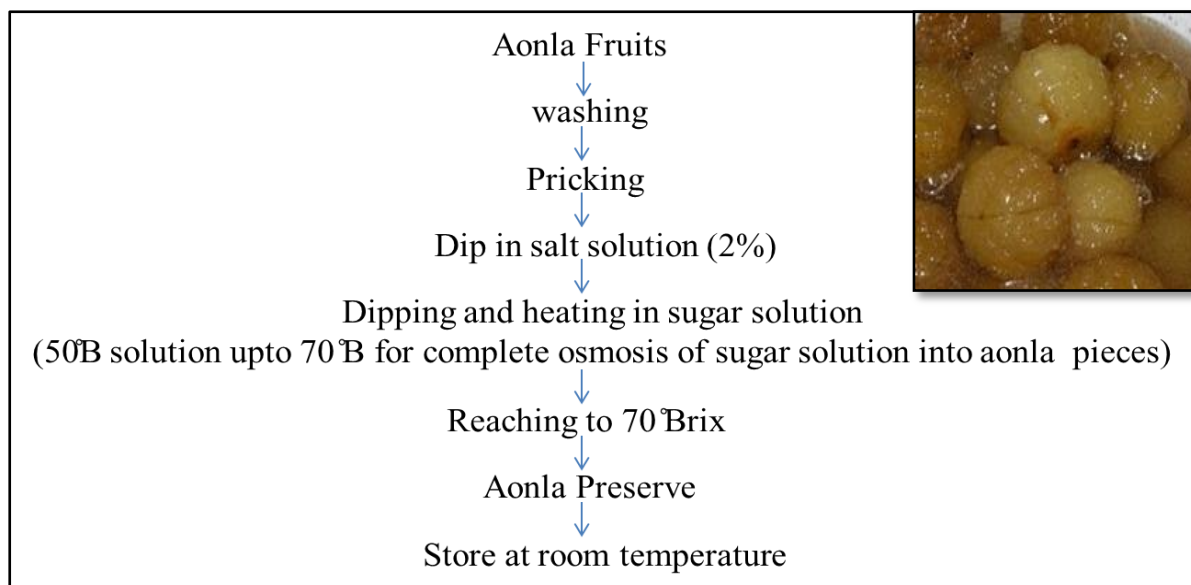


**Fig. 3 Flowchart for Preparation of Aonla Candy**



Specifications:  
Shelf life: around one year  
TSS : 60 to 65

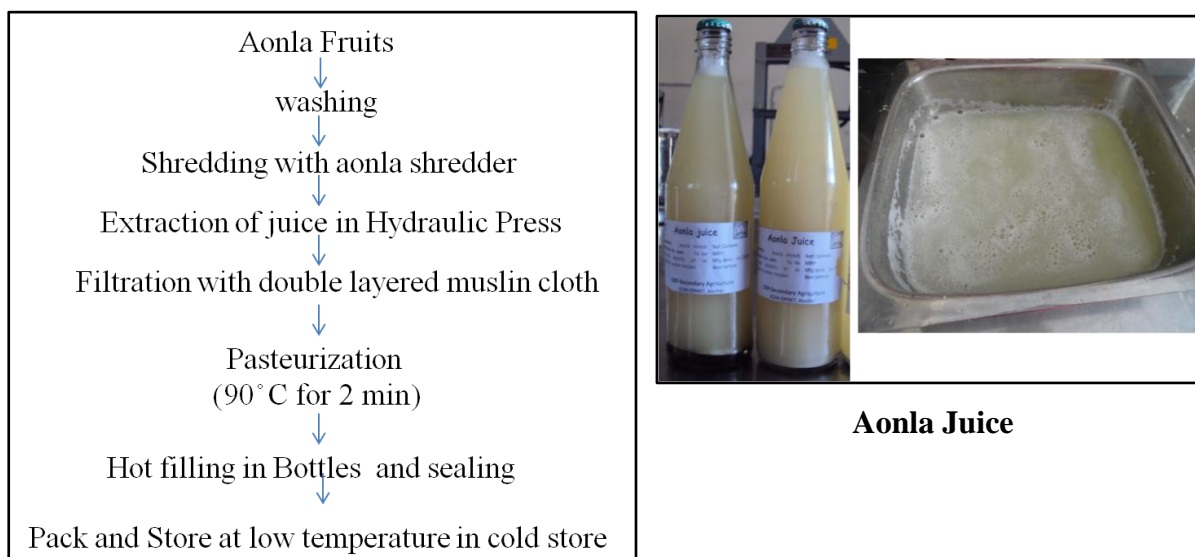
**Fig: Aonla Candy**



**Fig. 4 Flowchart for Preparation of Aonla Preserve**

**Specifications**

- Minimum % of prepared fruit: 55%
- TSS: 68 to 70 degree brix
- Sodium Benzoate: 200 ppm or sulphur dioxide: 40 ppm
- Shelf life : Around 1 year



**Aonla Juice**

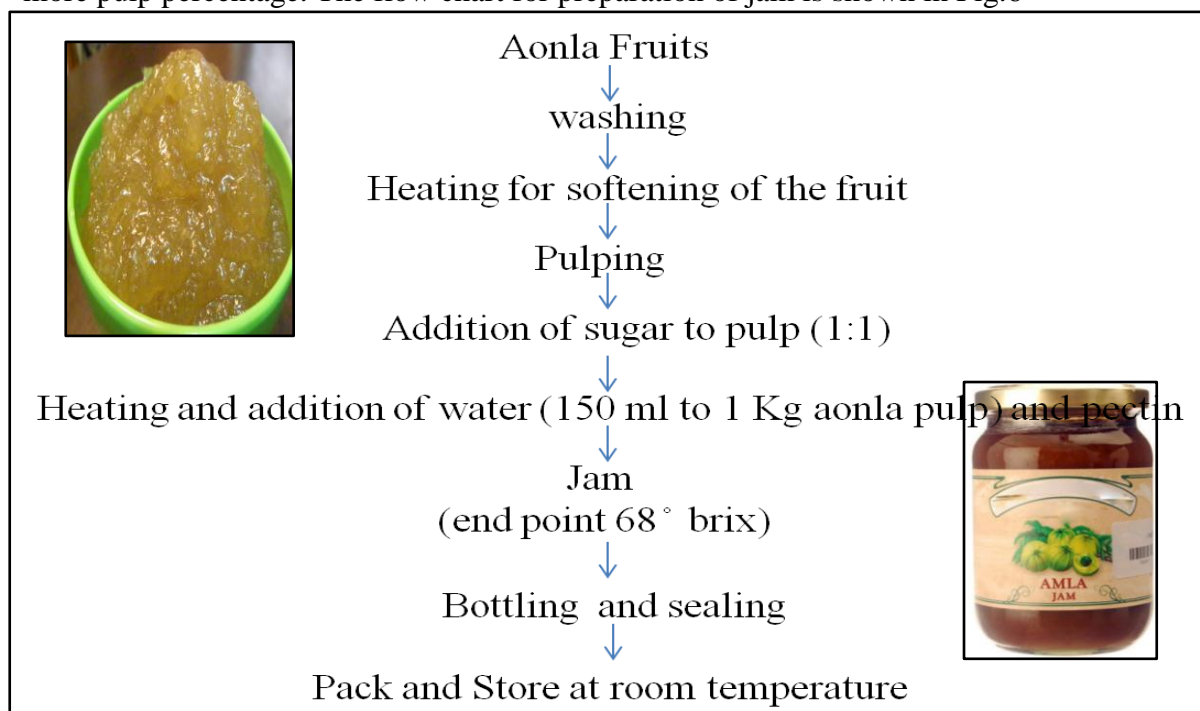
**Fig. 5 Flowchart for Preparation of Aonla Juice**

**Specifications:**

Juice: 100%, TSS: Natural, acidity: natural, Sodium Benzoate: 1000 ppm or KMS: 700 ppm  
 Shelf life : Heat treated juice will not get spoiled until the bottle is opened and preserved juice will stay good in condition for around 6 months

## Aonla Jam

Jam is a concentrated fruit product rich in natural fruit flavor. Pectin present in fruit gives it a good set and high concentration of sugar facilitates its preservation. It is prepared by boiling the fruit pulp with sufficient quantity of sugar (according to the recipe) to a reasonably thick consistency to hold the fruit tissues in position. The ideal fruit jam should contain 45 per cent of fruit portion, 68 per cent of total soluble solids (*Brix*) and 0.5 per cent acidity. Best quality jam can be prepared from the varieties which have low fiber content and more pulp percentage. The flow chart for preparation of jam is shown in Fig.6



**Fig. 6 Flowchart for preparation of aonla jam**

### Specifications:

Pulp: 45%, TSS: 68 to 70 brix, acidity: 0.5 to 0.6%, Pectin: 0.5 to 1.0 %, Sodium Benzoate: 200 ppm or sulphur dioxide: 40 ppm

Shelf life : Around 6 months at ambient temperature

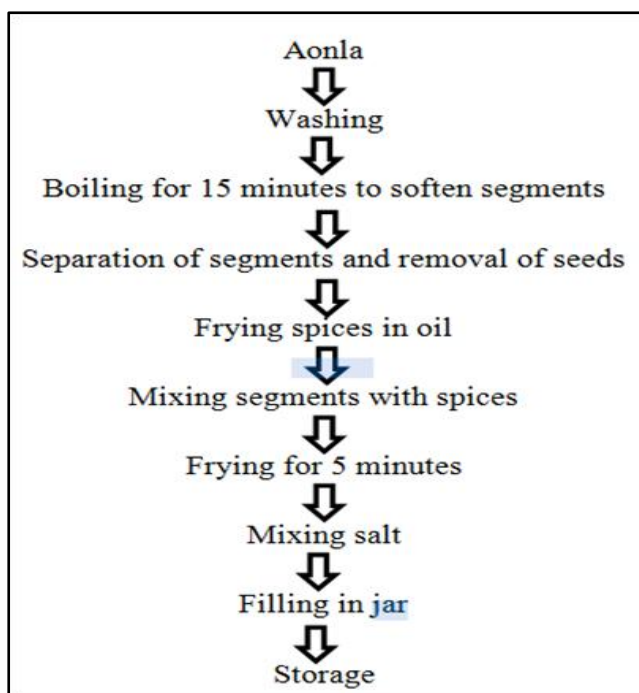
Note: In case of aonla jam there is no need of adding citric acid as it is an acidic fruit

### Aonla mouth freshener or digestive mix

Aonla mouth freshener was prepared using different ingredients including dried aonla shreds (after juice extraction) or dried aonla, sugar powder or jaggery, fennel seeds (roasted), mulethi, supari mix, black paper, black salt, ajwain seeds and cardamom powder. Coconut shreds may also be added for enhanced nutrition. All the ingredients were mixed in powder form followed by sieving and packing into polybags. The product was found acceptable in all sensory attributes. The aonla digestive mix should be stored in a cool and dry place. Shelf life of the product is high with around 6-8 months of storage period.



## Aonla Pickle



Small sized aonla not suitable for preparation of candy/preserves and other confectionary items may be employed for pickle making. For its preparation, addition of mustard oil, spices and condiments is desired to enhance its taste and flavor. Pickle after preparation may be stored at room temperature.

**Fig. 7 Flowchart for preparation of aonla pickle**

## Conclusion

Aonla is an important medicinal crop with great importance in ayurved history. The fruit is rarely consumed in its raw form because of its elevated astringency notes therefore it is important to convert aonla into different value added products namely candy, preserve, jam, jelly, pickle, chutney, digestive mix etc. Aonla should be processed into these value added products to enjoy it in the off season and also to tap its nutritional quality. It is the richest source of vitamin C along with other polyphenols and thus possesses great antioxidant activity. Aonla in form of processed products has huge demand and can be taken up as a start up by women entrepreneurs. The processing in case of aonla does not require many expensive machines or equipments and thus with a basic facility the business may be initiated. Women farmers and entrepreneurs can easily take up this as a profession and help in an additional income generation to their families.