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Vitamin C and Tannin content of *Amalaki Swaras* in Accordance with Various Months

Subhashchandra S Madavi[1*] and Priyanka K Tayade[2]

[1,2]Rasashastra and Bhaishajya Kalpana Dept., R.A. Podar Medical College (Ayu), Worli, Mumbai, Maharashtra, India

ABSTRACT

In *Ayurveda*, five basic extraction procedure were mentioned in the order of their decreasing strength. *Swaras* is considered to have the highest potent *kalpana* followed by the *Kalka*, *Kwath*, *Fant* and *Hima*. *Rasa* or *Swaras* is that which is obtained from the herbal plants which is fresh, free from insects and the insect bite and is crushed and it should be expressed through a fine cloth. Objectives- Present study was carried out to evaluate the changes in Quantity of *Aamalaki swaras* in every 15 days. Also, to check vitamin C and tannin content of *amalaki swaras* in every 15 days. Materials and method- *Aamalaki swaras* was prepared and given to Quality Control Lab to evaluate Vitamin C and Tannin content. One sample after every 15 days, in this way total eight samples of *swaras* were given for analysis. Result and Conclusion- The data will be assessed for its Quantity, Vitamin C and Tannin content. From this result we can conclude best period for *Aamalaki* collection.

KEYWORDS

Aamalaki swaras, Vitamin C, Tannin content, Quantity

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INTRODUCTION

Aamalaki (*Emblica officinalis*) had enjoyed the hallowed position in Ayurveda- an India indigenous system of the medicine. According to believe of ancient Indian mythology, *amalaki* is the first tree to be created in the world. It belongs to the family of Euphorbiaceae. It is also known by the name of *Amla*, Phyllanthus Emblica or Indian gooseberry[1].

Aamalaki (Emblica officinalis) is a medium sized deciduous tree found growing wild throughout tropical India and southwards to Ceylon and Malacca. Its distribution extends through Malaysia to South China[2].

The fruits contain properties such as- sour, astringent, bitter, acrid, sweet, cooling, ophthalmic, carminative, digestive, stomachic, laxative, aphrodisiac, rejuvenative, diuretic, antipyretic and tonic[3].

CLASSIFICATION

Kingdom: Plantae

Division: Angiospermae

Class: Dicotyledonae

Order: Geraniales

Family: Euphorbiaceae

Genus: Emblica

Species: officinalis Geartn.

VERNACULAR NAMES

English: Emblicmyrobalan, Indian Goose berry

Sanskrit: Aamalaki

Hindi: Amla

Kannada: NelliKayi

Marathi: Aavla

Gujarati: Ambla

Malayalam: NelliKayi

Tamil: Nelli

Telugu: Usirikaya

Kashmir: Aonla

Aamalaki (Emblica officinalis) is useful in vitiated conditions of *tridosha*, diabetes, cough, asthma, bronchitis, cephalalgia, ophthalmopathy, dyspepsia, colic, flatulence, hyperacidity, peptic ulcer, erysipelas, skin diseases, leprosy, haematogenesis, inflammations, anaemia, emaciation, hepatopathy, jaundice, strangury, diarrhoea, dysentery, haemorrhages, leucorrhoea, menorrhagia, cardiac disorders, intermittent fevers. It has been used in Indian medicine from ancient period as a remedy for anaemia, jaundice and dysentery. It is also made into pickles and pre- serves, and a wine made out of its juice is considered a specific for bronchial disorders[4].

The fruit of *Emblica officinalis* is known for its high level of Vitamin C and Tanin content. In this study *Aamalaki swaras* is analysed for its Quantity, Vitamin C and Tannin content in every 15 days. From this we can conclude a period in which *swaras* quantity is at optimal level compared to

different months, and also to know the highest value of Vitamin C and Tanin content.

AIMS AND OBJECTIVES

AIM

To study the Vitamin C and Tannin content in *Amalaki swaras.*

OBJECTIVE

- To evaluate Vitamin C in *Amalaki swaras*
- To evaluate Tannin content in *Amalaki swaras*
- To observe and assess the Quantity of *Amalaki swaras* after every 15 days.

METHODS AND MATERIALS

- For this study fresh *Amalaki* (*Emblica officinalis* Gaertn.) was procured from the market.
- Then the *swaras* was extracted out from the *amalaki*. One sample after every 15 days, in this way total 8 batches of *amalaki swaras* was prepared.
- Then the freshly prepared sample were send to Quality control lab for analysis of vitamin C and tannin.

EXTRACTION OF AMALAKI SWARAS

Materials-*Amalaki*, cotton cloth, knife, grinder, container, measuring cylinder.

Methods–Fresh *amalaki* procured from market. Then it was washed with the tap water and then later on cleaned with a dry cotton cloth. The cleaned *amalaki* were then cutted into the small pieces and the seeds were removed. Pieces of *Amalaki* were then crushed with the help of mixer grinder and then, squeezed through a cotton cloth. Then, the obtained *swaras* was measured in measuring cylinder.

ANALYSIS OF VITAMIN C

Material-Burette, stand, volumetric flask, conical flask, pipette.

Method–This method is used to determine the Vitamin C concentration in a solution by a redox titration using iodine solution. Vitamin C, more properly called as the ascorbic acid. When iodine is added during the titration, it oxidizes the ascorbic acid into the dehydroascorbic acid, and the iodine is reduced to iodide ions.

Ascorbic acid + I_2 = 2 I + dehydroascorbic acid.

Due to this reaction, the iodine is reduced to iodide. Till then there will be Ascorbic acid present in it. Once all the ascorbic acid has been oxidised, then the left out excess iodine is free to react with the starch indicator, which form the blue-black starch-iodine complex. That is the endpoint of this titration method[5].

ESTIMATION OF TANNIN CONTENT

Material-Measuring cylinder, gas, petroleum ether, distilled water, dish, potassium permanganate.

Method–Defat 2 gm of the sample with the 25 ml petroleum ether for 12 hour. Then boil the marc for 2 hour with the 300 ml of double distilled water. Then cool it and dilute it up to 500 ml and filter it. Measure 25ml of this infusion into the 2 litre porcelain dish; and then add 20 ml Indigo solution and 750 ml double distilled water into it. Then titrate it with 0.1 N potassium permanganate solution upto 1ml at a time, until blue solution changes to green in colour. Similarly, titrate mixture of 20 ml Indigo solution and 750 ml of the double distilled water. Calculate the difference between two titrations in ml[6].

RESULTS AND DISCUSSION

Emblica officinalis (E. officinalis), syn: Phyllanthus emblica, also called as Indian gooseberry. *Amla* belongs to the Euphorbiaceae family.

QUANTITY OF AMALAKI SWARAS

Every time fresh half kg (500 grams) *amalaki* were procured from market. The number of *amalaki* in half kg was decreased because there is increase in size of *amalaki*. The yield of *amalaki swaras* in every 15 days was mentioned in table no.1

Table 1 Quantity of Amalaki swaras according to various month

Date	Month according to Hindu calender	No. of *Amalaki*	Weight of *Amalaki*	Quantity of *swaras*
17/11/18	*Kartik*	14	500 gm	270 ml
1/12/18	*Kartik*	26	500 gm	300 ml
19/12/18	*Margashish*	28	500 gm	320 ml
5/1/19	*Margashish*	15	500 gm	350 ml
2/2/19	*Paush*	16	500 gm	365 ml
15/2/19	*Magh*	18	500 gm	380 ml
15/3/19	*Falgun*	13	500 gm	400 ml
3/4/19	*Falgun*	16	500 gm	400 ml

From the table no.1 we can say that the day by day quantity of *amalaki swaras* yield has increased. In initial days *swaras* was slight yellow in colour, later it becomes white in colour.

ESTIMATION OF VITAMIN C

Vitamin C content in fresh *Amalaki* juice was determined by direct titration with iodine. The amount of vitamin C was mentioned in table no.2.

Table 2 Estimation of Vitamin C according to various month

Date	Month according to Hindu calender	Vitamin C
17/11/2018	*Kartik*	145 mg/100 ml
1/12/2018	*Kartik*	148 mg/100 ml
19/12/2018	*Margashish*	146 mg/100 ml
5/1/2019	*Margashish*	147 mg/100 ml
2/2/2019	*Paush*	148 mg/100 ml
15/2/2019	*Magh*	147 mg/100 ml
15/3/2019	*Falgun*	148 mg/100 ml
3/4/2019	*Falgun*	148 mg/100 ml

ESTIMATION OF TANNIN CONTENT

The Tannin content in fresh *Amalaki* juice found were mentioned in table no.3

Table 3 Estimation of Tannin content according to various month

Date	Month according to Hindu calender	Tannin content
17/11/2018	*Kartik*	1.45 %
1/12/2018	*Kartik*	1.46 %
19/12/2018	*Margashish*	1.40 %
5/1/2019	*Margashish*	1.43 %
2/2/2019	*Paush*	1.42 %
15/2/2019	*Magh*	1.41 %
15/3/2019	*Falgun*	1.43 %
3/4/2019	*Falgun*	1.42 %

RASA

Rasa, Gandh, Ph value, specific gravity, total solid content of the *amalaki swaras* were mentioned in table no.4.

Table 4 Physicochemical analysis of Amalaki swaras

Date	Rasa	Gandh	pH value	Specific gravity	Total Solid
17/11/2018 (*Kartik*)	*Amla* + *Kashay*+ *Madhur*+	Pleasant	2.6	1.0386gm/ml	0.95%
1/12/2018 (*Kartik*)	*Amla*++ *Kashay*+ *Madhur*+	Pleasant	2.7	1.0489gm/ml	0.93%
19/12/2018 (*Margashish*)	*Amla*+++ *Kashay*++ *Madhur*+	Pleasant	2.6	1.0450gm/ml	0.92%
5/1/2019 (*Margashish*)	*Amla*++ *Madhur* + *Kashay*+	Pleasant	2.8	1.0393gm/ml	0.85%
2/2/2019 (*Paush*)	*Amla*++ *Kashay*+ *Madhur*+	Pleasant	2.6	1.04gm/ml	0.80%
15/2/2019 (*Magh*)	*Amla*+++ *Kashay*++	Pleasant	2.5	1.0793gm/ml	0.34%
15/3/2019 (*Falgun*)	*Kashay*++ *Amla*+ *Madhur*+	Pleasant	2.7	1.0528gm/ml	0.20%
3/4/2019 (*Falgun*)	*Kashay*++ *Madhur*+	Pleasant	2.7	1.0773gm/ml	0.31%

It contains *Amla*, *Madhur* and *Kashay* taste. But at the end of the season *amla* rasa gradually decreased and only *kashay* and *madhur rasa* remains in it.

From table no.4, we can say that there is gradually decrease in total solid content of the *amalaki swarasa*. Initial total solid content was 0.95% and at the end of the season it decreased upto 0.20%.

SPARSH

Its roughness also got decreased at the end of the season.

GANDHA

There is no change in its *gandha*. Throughout the season it remains same.

CONCLUSION

From the present study we can conclude that, *Amalaki* don't show any remarkable change in Vitamin C and Tannin content to the whole of its season. It almost remains same in every month. There is only change in Quantity of *swaras*, its colour, *rasa* and

sparsha. We can get maximum yield in quantity of *swaras* in *Margashish*, *Paush* and *magh* that is in December, January and February month. Validating the reference mentioned in *Charak Samhita*[7].

संवत्सरान्ते पौषी वा माघीं वा फाल्गुनीं तिथीम् ।

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There is also change in the total solid content of *Aamalaki*. It gradually decreases. Hence we can say that total solid content is inversely proportional to quantity of amalaki swaras.

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