



TASTE THRESHOLD STUDY OF AGNEYA AUSHADHI (CHITRAKA) COLLECTED IN TWO DIFFERENT SEASONS WITH SPECIAL REFERENCE TO ITS DRAVYA SANGRAHA KALA

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ABSTRACT

Rasapanchaka are responsible for the action of drug. Among them rasa is foremost. Direct contact of rasa with Rasanendriya is called Rasanapratyaksha. For that taste threshold is one of the directly perceivable parameters to know about the dominance or intensity of rasa for the drug. The study was planned to know the effect of two different Ritu on intensity of katu rasa of ushna dravya (Chitraka) by using taste threshold study with single blind method in specially designed proforma on 25 healthy volunteers. The obtained data were analysed by calculating the mean of dilutions. Taste threshold of ushna dravya (Chitraka) collected in Agneya Ritu was having higher intensity of katu rasa in both cold and hot infusion than Chitraka collected in Saumya Ritu.

Keywords: Taste threshold, Dravya sangraha kala, Ushna aushadhi, Chitraka, Katu rasa

INTRODUCTION

There are five fundamental concepts of the dravya like Rasa, Guna, Veerya, Vipaka and Prabhava¹. Which are responsible for dravyakarmukta. Ayurvedic classics classified various drugs into different groups on the basis of karma². Out of these five principles rasa is considered as the prime factor, which made acharyas to introduce groups of drugs basing on rasa i.e. Rasa varga or Rasas kandhas³.

In Sushruta Samhita we got a reference of seasonal collection that is; since the whole universe is predominantly Saumya (cold in qualities) and Agneya (fiery in qualities); Saumya aushadhi collected during Saumya Ritu will be more Madhura, Snigdha and Sheeta. Same for the remaining one, Agneya aushadhi collected during Agneya Ritu will be more Katu, Ruksha and Ushna⁴. Varsha, Hemanta and Shishira are three cold seasons; while Sharad, Vasanta and Grishma are three hot seasons⁵.

This total work was a humble effort in order to observe the effect of both Agneya Ritu - Grishma (In the month of May) and Saumya Ritu - Hemanta (in the month of November) on Rasa (Taste) of Agneya aushadhi (Chitraka - *Plumbago zeylanica*).

Primarily action of any dravya is based on its rasa. Rasa is an important quality manifested at the level of tongue. Rasa determination is one of the directly perceivable parameter to know about the drug. There are a few methods of taste determination developed by scholars of Ayurveda to identify the taste and to know the intensity of a particular taste.

Prof S.C. Dhyani conducted the taste threshold experiments on 150 well known Ayurvedic raw drugs and documented their rasa and also intensity of rasa by Pratyaksha pramana using tongue⁶. The identification and evaluation of pharmacological activity of a drug on the basis of rasa has been one of the most important

concepts of Ayurveda. Rasa of the substance is the foremost tool in Ayurveda to assess and determine the pharmacological properties and actions of the substance.

Taste threshold (intensity of taste)

Rasas are of several types on the basis of Tara-Tama bheda (degree of intensity) e.g. Madhura (sweet), Madhuratara (sweeter) and Madhuratama⁷ (sweetest). But at the time of description of drug Acharyas and Nighantukaras have not mentioned severity and intensity of taste in the particular drugs. So, to determine the intensity of taste in a drug, taste threshold method was evaluated by Dr. S. C. Dhyani⁸. Taste threshold reveal the intensity of taste in drugs. The taste threshold values of drugs were determined by many methods and ways:

- In cold water
- In hot water
- 6 hours after boiling
- In 1% saline solution
- In 1% glucose solution

When the volunteers have different tastes of a drug or when a drug has two tastes of equal intensity, the rasa having higher threshold values in that drug, that rasa will be considered as its pradhana rasa and another rasa will be considered as anurasa of that drug. If the threshold values are higher in cold water, the drug should be administered with cold water. If the threshold values are higher in hot water, the drugs should be administered with hot water. This is the clinical significance of this experiment.

Chitraka is frequently used drug in Ayurveda. As uprooting destroys plant forever, it is a need of an hour to have a medicine which has optimum quality even in a small quantity. Moreover, environmental factors like seasons also fluctuates the quality of

medicinal plants. Action of dravya is primarily based on rasa. So, rasa is an important parameter to assess the quality of dravya. For that, in this study an attempt has been made to compare the intensity of rasa of Chitraka root (*Plumbago zeylanica*) collected in two different seasons by adapting taste threshold method. This study involves human volunteers, so consent was taken and work approved through institutional ethics committee. This study was carried out as per international conference of harmonization - good clinical practices guidelines.

Aim of the experiment

To evaluate the dominance or intensity of rasa of Chitraka (*Plumbago zeylanica*) root, collected in both Agneya Ritu (Grishma) and Saumya Ritu (Hemanta).

MATERIAL AND METHODS

The study was conducted by single blind, forced choice method in healthy volunteers. Both the samples were administered in hot and cold dosage forms. The volunteers were requested to note down the start point and threshold point of taste perception by using Likert gradation scale in specially designed proforma. The obtained data were analysed. For that mean was taken for concluding the results for both the samples.

Dravya

1. Powder of *Plumbago zeylanica* root - Collected in Agneya Ritu (Grishma).
2. Powder of *Plumbago zeylanica* root - Collected in Saumya Ritu (Hemanta).

Powder (Churna)

Both the samples were finely powdered and sieved through 80 mesh sieve.

Volunteers

25 Female healthy volunteers, having knowledge of rasa perception specifically from Ayurveda fraternity, were selected for the present study.

Proforma

A special proforma was designed to note down the rasa perceived by the volunteers.

Method

Determination of taste threshold for both the samples has been carried out in two phases:

*Phase I (Cold method)

5 grams of dried powder of the samples were taken in 100 ml of water and stirred it well for 30 minutes; then filtered it with the filter paper. The filtrate was used as a stock solution for further dilutions. Before going to actual dilutions, Pilot study of dilutions was done.

In experiment, 1 ml of filtered solution was taken and tasted. Then it was diluted with distilled water gradually. Dilutions were estimated by diluting 1 ml of stock solution with distilled water in the ratio of 1:20, 1:40, 1:60 etc. for Chitraka for testing the taste perceptions. Tasted a few drops of solution of each dilution. The actual ranges of dilutions were taken in between the dilutions where the taste can be perceived and at what dilution taste cannot be perceived. The point at which the taste was last perceived was considered as the taste threshold of that taste in that drug. Any further dilutions of solutions would reveal no taste.

*Phase II (Hot method)

Some drugs contain some volatile oils that subscribe to the taste of drugs. Some fractions are dissolved on boiling the drug in water. Therefore, the threshold values were determined in hot water also.

5 grams of dried powder of the sample was dissolved in 100 ml of water and boiled till it was reduced to 50 ml, while boiling it was stirred and then filtered. 1 ml of filtered solution was taken and tasted. Then it was diluted with distilled cold water gradually. The point at which the taste was last perceived was considered as the taste threshold of that taste in that drug.

Taste threshold for Katu rasa

Criteria for measurement of taste threshold⁹: On the basis of this method, 0-233 ml threshold is considered under Katu dravya, 234 to 466 ml threshold is considered under Katutara dravya and 467 to 860 ml threshold is considered under Katutama dravya by Dr. S. C. Dhyani. As cited in Table 1.

Table 1: Threshold of Katu rasa

No.	Taste threshold (ml)	Intensity of Rasa
1	0-233 ml	Katu
2	234 - 466 ml	Katutara
3	467 - 860 ml	Katutama

Observations

Chitraka collected in Agneya Ritu (Grishma)

Cold infusion

Among all 25 volunteers, maximum no. of volunteers 14 (56%) were having a taste threshold at 200 ml, further 6 (24%) volunteers were having taste threshold at 220 ml, 2 (8%) volunteers were having taste threshold at 160 ml. At 240 ml only one (4%) volunteer has felt taste threshold, 1 (4%) volunteer and

1 (4%) volunteer obtained the taste threshold for 180 ml and 140 ml respectively.

Hot infusion

Maximum volunteers 16 (64%) were having taste threshold at 160 ml. Secondly 6 (24%) volunteers obtained taste threshold at 180 ml. 1 (4%) volunteer, 1 (4%) volunteer, for 1 (4%) volunteer perceived the taste threshold For 100 ml, 120 ml and 140 ml respectively.

Chitraka collected in Saumya Ritu (Hemanta)**Cold infusion**

At 140 ml 11 (44%) volunteers perceived the taste threshold. At 120 ml 4 (16%) volunteers, at 200 ml 3 (12%) volunteers, at 180 ml 2 (8%) volunteers, at 100 ml 2 (8%) volunteers, at 80 ml 2 (8%) volunteers felt taste threshold. Only one (4%) volunteer obtained taste threshold at 160 ml.

Hot infusion

At 100 ml maximum 10 (40%) volunteers perceived the taste threshold. At 140 ml 6 (24%) volunteers, at 40 ml 4 (16%) volunteers and at 120 ml 3 (12%) volunteers felt taste threshold. 1 volunteer obtained taste threshold in each (4%, 4%) dilution for 80 ml and 60 ml.

RESULT AND DISCUSSION

Taste threshold of Chitraka in cold and hot infusion, collected in both Agneya Ritu (Grishma) and Saumya Ritu (Hemanta).

Table 2: Taste threshold of Chitraka

Katu Dravya		Intensity of Rasa		
		Katu	Katutara	Katutama
		0 - 233 ml	234 - 466 ml	467 - 860 ml
Chitraka collected in Agneya Ritu (Grishma)	Cold infusion	200	-	-
	Hot infusion	160	-	-
Chitraka collected in Saumya Ritu (Hemanta)	Cold infusion	140	-	-
	Hot infusion	100	-	-

All the results found for Chitraka collected in two different seasons were into the category of katu in range of 0 - 233 ml.

- Cold infusion

- Chitraka collected in Agneya Ritu: Taste was last perceived at 200 ml dilution.
- Chitraka collected in Saumya Ritu: Taste was last perceived at 140 ml dilution.

- Hot infusion

- Chitraka collected in Agneya Ritu: Taste was last perceived at 160 ml dilution.
- Chitraka collected in Saumya Ritu: Taste was last perceived at 100 ml dilution.

From the above result it is clear that for both cold and hot infusion, Taste threshold was higher in the sample of Chitraka collected in Agneya Ritu (Grishma), than the taste threshold of Chitraka collected in Saumya Ritu (Hemanta).

Rasa of the dravya is the foremost parameter to determine the pharmacological action of the dravya. As per mentioned in Sushruta Samhita, in this study katu rasa was more ushna when it was collected in Agneya Ritu and the reason for that is, katu rasa is made up of vayu + Agni mahabhuta. Even in Grishma Ritu, vayu and Agni mahabhuta are predominant. So, the intensity of katu rasa was more in Grishma Ritu. Another explanation can be given with the help of guna. Katu rasa is having ushna, laghu and ruksha guna. In Grishma Ritu also, ushna, laghu, ruksha guna are predominant. So, katu rasa's intensity was more in Grishma Ritu. That's why; it is considered that Chitraka root collected in Agneya Ritu (Grishma) was more katu than the Chitraka root collected in Saumya Ritu (Hemanta).

Table 3: Rating-scale of taste descriptions

Response	Likert (numerical values used in analysis but never shown to subjects)
1	Same as water
2	Doubtful if pure water
3	A very faint taste, can't say
4	A very faint taste (mention the name of taste)
5	A faint taste (mention the name of taste)
6	A weak taste (mention the name of taste)
7	Clear taste (mention the name of taste) ¹⁰

CONCLUSION

Taste threshold was higher in the sample of Chitraka collected in Agneya Ritu. Results of Taste threshold study indicate that seasons has influence on the intensity of rasa. So, Agneya aushadhi should be collected in Agneya Ritu.

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