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Research Article

RASANIRDHARANA (ASSESSMENT OF TASTE) OF AN EXTRA PHARMACOPOEIAL DRUG - *CISSUS LATIFOLIA* LAM.

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ABSTRACT

Ayurveda literatures include the descriptions of many drugs in terms of their names, properties and therapeutic usage. But many drugs, despite their substantial therapeutic value and wide acceptance among numerous ethnic groups, are left unrecorded in the classical texts. These drugs are generally termed as *Anukta Dravya*. The action of an *Anukta Dravya* can be explained with its *Rasapanchaka* viz. *Rasa* (taste), *Guna* (quality), *Veerya* (potency), *Vipaka* (transformation) and *Prabhava* (special action). Among these attributes of a drug, *Rasa* perceived through the gustatory receptors of the tongue, is the only parameter that can be evaluated by direct perception. *Cissus latifolia* Lam. is an extra-pharmacopoeial drug with several ethnomedicinal claims. No attempts have been made to explore the pharmacological properties of this drug. The *Rasapanchaka* in accordance with the principles of Ayurveda pharmacology is also not assessed till date. So, to study the properties of the drug, *Rasa* analysis was done by using the 'taste perception method' by administering 3 grams of powdered drug to 30 volunteers. A structured questionnaire prepared based on the Ayurveda literatures was used for the collection of data from the respondents. The highest number of respondents pointed out *Kashaya Rasa* (76.6%) as the predominant *Rasa* and *Tikta Rasa* (63.3%) as the perceived *Anurasa*. So, it was concluded that Cissus *latifolia* Lam. have *Kashaya Rasa* (astringent) and *Tikta Anurasa* (bitter).

INTRODUCTION

Ayurveda explains the physiology of the human body, pathology of diseases and the pharmacology of the drugs based on its unique principles like *Panchamahabhoota* and *Tridosha*. Ayurveda has also explained the concepts of pharmacodynamics and pharmacokinetics through its own unique principles. These concepts are described using the *Saptapadartha* viz. *Dravya* (drug), *Rasa* (taste), *Guna* (quality), *Veerya* (potency), *Vipaka* (transformation), *Prabhava* (special action) and *Karma* (pharmacological action).[1] Among these attributes, *Rasa* (taste) of a substance is the foremost tool to assess the pharmacological behaviour of a *Dravya*.[2]

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Using the above methodology, Ayurveda literatures have described many drugs in terms of their names, properties and therapeutic usage. But there are many drugs, despite their medicinal value and wide usage among ethnic groups, which are left unrecorded in the classical texts. These drugs are generally termed as *Anukta Dravya*.[3]

Rasapanchaka analysis is mandatory for incorporating *Anukta Dravyas* to The Ayurvedic Pharmacopoeia of India.[4] According to Ayurveda, *Rasa* are six in number viz; *Svadu* (sweet), *Amla* (sour), *Lavana* (salty), *Tikta* (bitter), *Katu* (pungent) and *Kashaya* (astringent).[5] But as per modern concept, there are only five tastes, sweet, sour, salty, bitter and umami.[6] *Rasa* means taste and is recognized by its own characteristic features. Assessment of *Rasa* can be carried out using two methods namely, 'The taste perception method' and 'The taste threshold method'.

Cissus latifolia Lam. commonly called as '*Chunnambuvalli*' in Malayalam belonging to the family Vitaceae is one such drug (Figure.1). It is a climbing shrub seen distributed along peninsular India and Sri

Lanka. The seventh volume of 'Hortus Malabaricus' has a detailed description of the plant. It has reported its therapeutic uses in many conditions such as fever, cough, pleuritis, halitosis, odontalgia and also in wound healing.[7] No attempts have been made to explore the *Rasapanchaka* of *Cissus latifolia* in accordance with the principles of Ayurveda pharmacology till date. So, the present study was designed to assess the *Rasa* of aerial parts of *Cissus latifolia* Lam.

Figure. 1: *Cissus latifolia* Lam.

Material Collection and Preparation of the Powder

The aerial parts of *Cissus latifolia* Lam. was collected for the study in the month of July, 2021 from Thrissur, Kerala. The material was identified and confirmed at the Kerala Forest Research Institute, Peechi. A voucher specimen (18030) was also deposited in the institute. The plant was cleaned, chopped, dried in shade and powdered. A mesh size #80 was used to sieve the powder. (Figure.2)

MATERIALS AND METHODS

Rasa analysis of *Cissus latifolia* Lam. was done by using 'The taste perception method' following the guidelines of Prof. S.C. Dhyani. It was done by administering 3 grams of powdered drug to 30 healthy volunteers and analysis of the observed data.[8]

Figure. 2: Powder of *Cissus latifolia* Lam Plant

Preparation of Questionnaire

A structured questionnaire was prepared based on the Ayurveda characteristics of each *Rasa* described in major literatures like Charaka Samhita, Susruta Samhita, Ashtanga Sangraha, Ashtanga Hrudaya and Bhavaprakasha. (Table.1) Questions for assessing the reactions experienced on the eyes, nose, tongue, buccal cavity, throat and palate when the drug is tested were also added.[9] Total 16 characteristics were included in the questionnaire. Direct response in terms of *Rasa* and *Anurasa* were also recorded.

Table 1: Characteristics of each *Rasa* [10-14]

S. No	Taste	Characteristics
1	*Madhura*	*Vaktram Anulimpati* (besmears the mouth) *Aaswadyamano Dehasya* (soothing to the body) *Akshaprasadana* (soothing to sense organs)
2	*Amla*	*Kshalayate Mukham* (cleanses the mouth) *Danta Harsha* (tingling sensation in teeth) *Roma Harsha* (generates horripilation) *Aksibhruvam Sankochayati* (constriction of eyes and eyebrows) *Mukhasravam Janayati* (salivation in mouth) *Sradhaam Utpadayati* (generates interest) *Urakantam Vidahati* (burning sensation in chest and throat)
3	*Lavana*	*Syandayati Aasyam* (moistens the buccal cavity) *Kapola Gala Dahakrt* (burning sensation in throat and buccal cavity) *Bhakta Ruchim Utpadayati* (generates taste in food) *Kapha Prasekam Janayati* (produces salivation) *Mardavam Aapadayati* (softens the buccal cavity)
4	*Tikta*	*Vishadayati Asyam* (cleanses the mouth) *Rasanam Pratihanti* (obstructs taste perception)

		Svayam Arochishnu (distasteful)
5	*Katu*	*Udvejayati Jihvaagram* (irritates the tongue tip) *Kurvati Chimichima* (causes tingling sensation) *Sraavayati Akshi* (lacrimation from eyes) *Sraavayati Nasam* (secretion from nose) *Sraavayati Mukham* (salivation)
6	*Kashaya*	*Jatayati Jihva* (stiffness of tongue) *Kanta Vibandhakrt* (obstructs the throat) *Pidayati Hrdayam* (pressure on chest) *Vaktram Parisosayati* (generates dryness in mouth)

Selection of volunteers

30 healthy volunteers were selected for the study. All the participants were Ayurveda post graduate scholars of Govt. Ayurveda College, Thiruvananthapuram, Kerala. The methods of the study, its rationale and their role as a participant were explained in detail to each patient.

On the day of assessment, each participant was asked to thoroughly wash their mouth with distilled water. After 5 minutes, 3 grams of the powdered drug was served to them. After assessing the overall oral experience with the drug, they were asked to record their inputs in the questionnaire.

Statistical analysis

The answer (Yes/No) obtained for each characteristic and the perceived *Rasa* and *Anurasa* judged by each volunteer were tabulated in Microsoft excel and the data was analysed for statistical means and proportions.

RESULTS

30 volunteers participated in the study and provided their inputs. Data showed that 87% of the respondents experienced *Kashaya Rasa* and 43% of the respondents experienced *Tikta Rasa* (Table 2). When the data on direct response on perceived taste of the drug was analysed, highest number of respondents have pointed out *Kashaya Rasa* (76.6%) (Table 3). *Anurasa* perceived was *Tikta* (63.3%) (Table 4).

Table 2: Symptoms Experienced by the Respondents

S.No	Symptoms	*Lakshana* type	Corresponding *rasa*	Number reported (n=30)	%
1	Besmears the mouth/causes stickiness in mouth, coating in mouth (*Vaktram Anulimpati*)	Individual	*Madhura*	8	27
2	Pleasant or soothing sensation to the nose, mouth, throat, lips and tongue (*Ghrana Mukha Kanta Oshta Jihwa Prahladano*)	Individual	*Madhura*	0	0
3	Causes salivation (*Aasyam Aasravayati*)	Common	*Amla, lavana, katu*	8	27
4	Cleanses the mouth (*Visadayati Vadanam*)	Common	*Amla, tikta*	3	10
5	Tingling sensation of teeth (*Dasanaan Harshayati*)	Individual	*Amla*	1	3
6	Constriction of eyebrows and eyelids(*Akshibhruvam Samkochayati*)	Individual	*Amla*	1	3
7	Softens the buccal cavity (*Mardavam Cha Aapadayati*)	Individual	*Lavana*	1	3
8	Burning sensation in the throat and buccal cavity (*Kantakapolam Vidahati*)	Individual	*Lavana*	1	3
9	Instant irritation to tongue tip	Individual	*Katu*	2	7

	(*Bhrisham Udvejayati Jihwagram*)				
10	Irritation in throat and buccal cavity (*Chimichimayati Kanta Kapolam*)	Individual	*Katu*	9	30
11	Secretion from nose (*Sravayati Naasikam*)	Individual	*Katu*	0	0
12	Lacrimation (*Sravayati Akshi*)	Individual	*Katu*	1	3
13	Distasteful (*Arochishnu*)	Individual	*Tikta*	13	43
14	Dryness of mouth (*Vaktram Parisoshayati*)	Individual	*Kashaya*	26	87
15	Feeling of stiffness of tongue (*Jadayati Jihwaam*)	Individual	*Kashaya*	8	27
16	Obstructive feeling in throat (*Kantam Badhnaati*)	Individual	*Kashaya*	10	33

Table 3: Direct Response on *Rasa*

***Rasa* reported**	**Total respondents**	**Percentage**
Kashaya	23	76.6%
Tikta	7	23.3%

Table 4: Direct Response on *Anurasa*

***Anurasa* reported**	**Total respondents**	**Percentage**
Tikta	19	63.3%
Kashaya	5	16.6%
Katu	2	6.6%
Madhura	1	3.33%

DISCUSSION

Rasa of a *Dravya* has an effect on its *Karma* and the identification of *Rasa* could be one of the means for inferring *Guna*, *Virya* and *Vipaka* of the *Dravya*. So, the *Rasa* of aerial parts of *Cissus latifolia* Lam. was analysed using a structured questionnaire and the analysis of the data revealed that the *Rasa* of the drug was *Kashaya* followed by *Tikta Anurasa*.

According to Ayurveda, each one of the six *Rasa* is constituted by the combination of any two of the *Panchamahabhuta*. The constitution of *Kashaya rasa* is *Vayu* and *Prthwi*, while that of *Tikta Rasa* is *Akasha* and *Vayu*.[13] Generally, drugs having *Kashaya* and *Tikta rasa* are inferred to be *Rooksa* (dry) in *Guna*, *Sheeta* (cold) in *Veerya* (potency) and *Katu* (pungent) in *Vipaka* (transformation), if the drug follows the general principle (*Samana Prathyayarabda*).

Both *Kashaya Rasa* and *Tikta Rasa* are *Ruksha, Pittakaphasamaka, Kledamedovisoshana* (dries up moisture and fat), *Lekhana* (scraping) and *Jwarahara* (relieves from fever). *Kashaya Rasa* is said to have *Karma* (functions) like *Ropana* (healing), *Sandaneeya* (helps to heal fractured bones and wounds), *Jihwa Vaishadyakara* (cleanses the tongue), *Asra Visodana* (purifies blood) and *Twakprasadana* (tonic to skin). *Tikta Rasa* possesses *Karma* like *Dipana* (appetizer), *Pachana* (digestive), *Mukha Vaishadyakara* (cleanses oral cavity), *Puyagna* (reduces pus), *Visagna* (antipoisonous), *Krimigna* (antihelminthic), *Daha Prasamana* (relieves burning sensation) and *Trsna Prasamana* (relieves thirst).[15]

Cissus latifolia Lam. is a drug predominantly used as an ethnomedicine by the traditional healers of southern and central parts of Kerala. There are many ethnomedical claims for this drug as reported by the seventh volume of Hortus malabaricus. This includes inflammatory pain and swellings, fever, cough, pleuritis, odontalgia, halitosis and wound healing which are among the therapeutic indications for *Kashaya Rasa* and *Tikta Rasa* drugs in Ayurveda. Most of the reported ethnomedicinal claims can be explained by the activities attributed to *Kashaya Rasa* and *Tikta Rasa* and it be inferred that *Cissus latifolia* Lam. possess *Kashaya Rasa* as the predominant taste.

CONCLUSION

The study to evaluate the *Rasa* of an extra-pharmacopoeial drug, *Cissus latifolia* Lam. revealed that it possesses *Kashaya Rasa* and *Tikta Anurasa* based on the responses elicited using a structured questionnaire. The ethnomedicinal claims are in tune with the pharmacological activities of *Kashaya* and *Tikta Rasa*. As *Rasa* is the only directly perceivable parameter, *Rasa Nirdharana* is one of the primary

steps in process of screening of an extra-pharmacopoeial drug in accordance with Ayurveda pharmacology. This gives scope for further research in drug development on this plant based on its ethnomedicinal claims.

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