IJAPC

Volume 11 Issue 2,
2019

www.ijapc.com

2350-0204

GREENTREE GROUP PUBLISHERS

Int J Ayu Pharm Chem

REVIEW ARTICLE

www.ijapc.com

e-ISSN 2350-0204

Assessment of *Rasa panchaka* Profile of the Drug *Apama siliquosa. Lam*- an Extra-pharmacopeial plant

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ABSTRACT

Folklore medicine contains many drugs which are not mentioned in Ayurveda texts which are known as *Anukta Dravya* (extra pharmacopeial drugs). These constitute a group of ethno medically important drugs. *Rasa* (taste), *Guna* (properties), *Veerya* (potency), *Vipaka*and *Prabhava* are collectively known as *Rasa Panchaka.* It is essential to assess basic pharmacodynamics properties of *Anukta Dravya* in terms of *Rasa Panchaka. Apama siliquosa. Lam*is one of the folklore medicine used to treat cholera, diarrhoea. It is an erect shrub growing mainly in the western ghats of India. It belongs to the family aristolochiacea. It is locally identified as *Chakranike.* The root of the drug is used in the treatment. According to folklore practice it can be used in both vomiting and diarrhoea by changing the modalities of administration and use of the root. It is not mentioned in any of the classical texts of Ayurveda and lacks the pharmacodynamics properties in terms of *Rasa Panchaka.*The present study is aimed to assess the *RasaPanchaka* profile of the drug *Apama siliquosa.Lam*.

KEYWORDS

Chakranike, Apama siliquosa.Lam, Rasa Panchaka, pharmacodynamics properties

Greentree Group Publishers

Received 24/07/19 Accepted 20/08/19 Published 10/09/19

INTRODUCTION

India is a vast country with rich flora. It is having a diversified ethno medicinally important plants species. The increasing demand for herbal raw materials and products and the encroachment of civilization into plant habitat is increasing demand for new folklore medicines.

Concept of *Anukta Dravya* in *Ayurveda* is employed to address the matter which are not clearly understood, it may be an unknown disease, an unknown drug an unknown formulation etc. in such situations it is advocated that one should use the available information and evaluate, analyze it as per the accepted guidelines and arrive at a proper mechanism to understand and accomplish the matter. This holds well for incorporating *Anukta Dravya* into *Ayurvedic* therapeutics and assigning them a place in *Ayurvedic* pharmacopeia.

The complete description of extrapharmacopieal plants in the terms of pharmacognostic and pharmacodynamics properties i.e name, identification, morphology, *Rasapanchaka* etc may not be available in the Ayurvedic texts. There is a need to first demarcate, identify, name these plants and then analyze them scientifically in the terms of *Rasa*(taste), *Guna* (properties), *Veerya* (potency) and *Vipaka*.

*Apamasiliquosa. Lam*is one of the folklore medicine used in treating diarrhoea. No reference of the drug is found in the ancient scriptures like *Vedas* and *Puranas*. But there is a folklore reference saying, the drug *Chakrani* was given by the Lord*Shrimannarayana* when the people were suffering from the severe vomiting and diarrhea[1].It is not mentioned anywhere in the *Brihatrayee* and *Laghutrayee*. Even the references of this drug are not found in the *Nighantus.*This study is planned to ascertain some aspects of the *Rasapanchaka* profile of an extrapharmacopieal plant *Apama siliquosa.Lam.*

MATERIALS AND METHODS

***Botanical description*[2]:**

Scientific name of the drug is *A.siliquosa.Lam* belongs to the family Aristolochiaceae. It is an erect shrub or undershrub with branches swollen at the nodes with a smooth yellowish grey bark. Leaves are alternate, distichous, up to 22X7.5cm, oblong- lanceolate, acuminate at apex, acute at base, glabrous above, sparsely hairy beneath, 3-nerved at the base; petiole very short. Slightly aromatic when bruised. Flowers areregular, in axillary shortly pedunculate irregularly umbellate cymes; bracts small, linear;

pedicels pubescent. Perianth- lobes3, ovate, concave, valvate, pubescent, dark purple. Stamens 6, in 3 groups of 2, adnate to style; anthers hairy. Ovary is inferior, elongate, 4-celled; ovules numerous; style short; stigma 4. Fruit is a capsule, up to 10cm long, linear, torulose. Seeds many, oblong, trigonus, pitted.

Figure 1 is the photos of the test drug.

Figure 1a Whole plant

Figure 1b Branch with swollen node

Figure 1c Flower of *A.siliquosa.Lam*

Figure 1d Root of *A.siliquosa.Lam*

It is distributed across Peninsular India and it is native plant of Western Ghats, Sri Lanka. It is commonly occurring in cool and marshy places, under shade and grows along the banks of streams. Evergreen and semi evergreen forests. Flowering season is from January to November. Used parts are roots[3, 4, 5].

***Collection of the drug*:**

Root of the plant sources were collected from local areas surrounding Udupi district and was authenticated by the Taxonomist, K. Gopalakrishna Bhat. The root was cleaned to remove the physical impurities and washed thoroughly with water. The root powder of *A.siliquosa.Lam* was prepared at SDM pharmacy, Udupi.

Assessment of Rasa (Taste determination)[6]:

‘‘Taste with tongue’ is one of the criteria for determining the *Rasa* or *Anurasa* of a Drug. The taste which is perceived as soon as the drug placed on the tongue is called as rasa. Taste determination procedure which was conducted is as follows:

Healthy volunteers, preferably *Ayurvedic* scholars were selected for the study. Single blind method was followed, in which the volunteers were not told about the identity of the drug.They were asked to wash their mouth. After five minutes of gap drug was given to taste.1gm of churna of *A.siliquosa* was given to the volunteers. Then they were requested to record the *Rasa* and *Anurasa* which they perceive, in the chits of paper given to them.

Assessment of Veerya*[7]*:

Procedure:10 ml of distilled water was taken in conical flask and the temperature of the water is noted with the help of industrial thermometer. 1 gram of *Apama siliquosa. Lam*rootpowder was added to the above 10ml of distilled water. Soon after the addition, temperature of water was noted with the help of industrial thermometer. After 5min, 10min, 15min, 30 min, 45 min temperature of water with the powder of *A.siliquosa.Lam* readings were observed and recorded. This procedure is repeated for many times to avoid the human errors.

Assessment of Vipaka (Metabolic study):

The experimental study was carried out in the Pharmacology department of S.D.M Centre for Research in Ayurveda and Allied Sciences, Udupi.Aqueous extract of *A.siliquosa.Lam*:Aqueous extract of *A.siliquosa.Lam* is prepared by percolation method at SDM Centre for research in Ayurveda and allied sciences, Kuthpady, Udupi.

Procedure of Aqueous extract of *Apama siliquosa.Lam*[8]: About 30gm of powdered sample of *Apama siliquosa.Lam* was weighed and 300ml of distilled water was added and extracted in a Soxhlet's apparatus separately. The process was carried out at 70^0 C temperature till saturation obtained.

Method of drug administration: The aqueous extract of the drug was made into suspension in water with suitable concentration andthen administered according to the body weight by oral route with the help of oral feeding needle sleeved on to disposable syringe.

Husbandry condition:Rats were housed in each cage of poly propylene with stainless steel top grill. The dry paddy husk was used as bedding material and was changed every morning. The animals were exposed to 12 hours light and 12 hours dark cycles with the relative humidity 50 to 70% and ambient temperature was 22 ± 03^0C.

*Diet:*Sai durga animal feed was provided throughout the study period.The drinking water was provided in ad libitum in poly propylene bottles with stainless steel sipper tube.

*Inclusive criteria:*Healthy Albino rats weighing 200g - 250g of either sex will be taken for the study.

Exclusion criteria:

- Rats subjected to other experiments.
- Rats with pathological conditions.
- The rats weighing less than 200g and more than 250gms.
- Albino rats which are pregnant.

Procedure:Wister Albino rats were weighed and groups were named as follows:

- Group A as control group
- Group B as test group

The rats from each group were kept in a separate metabolic cage which was provided with constant amount of water and food per day. Each rat was administered with 50g of food and 200ml of water per day for 15 days.

In control group i.e. Group A, only water and food was administered to serve as control. In test group i.e. Group B, test drug was administered from the 6^{th} day according to the dose obtained from AOT study along with food and water for 15 days. After 24 hours, both in control and test groups, body weight, the weight of the faecal matter, Urine output, weight of the remaining food and quantity of the remaining water was noted.

The weight of the faecal matter was noted and then kept for drying in the hot air oven for 24 hours. Next day the weight of the dry faecal matter was noted and the record was maintained for further statistical analysis. *Vipaka* was analysed on the basis of food, water consumption, faecal matter and urine quantity parameters enlisted in the table no. 1.

Table 1 Parameters to be recorded for the assessment of *Vipaka*

Sl. No	Parameters To Be Recorded
1.	Food Consumption
2.	Water Consumption
3.	Urine Output
4.	Faecal Weight
5.	Faecal Wet Weight
6.	Faecal Dry Weight
7.	Food Conversion Ratio (Food Consumption /Faecal Output)
8.	Faecal Water (Faecal Dry-Faecal Wet)
9.	Body Weight

RESULT

Taste determination:

The test was conducted on a volunteer group of sample size 30.Results of *Pradhana rasa* and *Anurasa* of *Apama siliquosa.lam* as observed from the volunteers are mentioned in table no.2.

Table 2 Results of *Pradhana rasa* and *anurasa* of *Apama siliquosa.lam* as observed from the volunteers

Rasa	*Pradhana Rasa*		*Anurasa*	
	Volunteers	Percentage	Volunteers	Percentage
Tikta	29	96.66	3	10
Kashaya	1	3.33	26	86.66
Madhura	-	-	1	3.33

It was observed that 96.66% of the volunteers perceived *Tikta*as *pradhana rasa* and 10% volunteers as *Anurasa*. 3.33% of the volunteers perceived*Kashaya* as *pradhana rasa* and 86.66% as *Anurasa*.From the above procedure, we can consider *Tikta* as *pradhana rasa* and *Kashaya* as *Anurasa* of the drug *A.siliquosa.Lam.*

Determination of Veerya:

Exothermic and endothermic reactions were noted for the duration of 45 minutes. The thermometer shows an increase in temperature by 1^0c, suggestive of *Ushna Veerya* of drug *A.siliquosa.Lam.*

Assessment of Vipaka- Metabolic study:

The data related to the effect of *A.siliquosa* test formulation on food consumption on the basis of absolute value have been summarized in the table.no.3.

Table 3 Effect of Aqueous extract of *Apama siliquosa.Lam* on food consumption with data presented in absolute values

Group	**Food consumption in g(absolute values)**		
	Preliminary phase	**Therapeutic phase**	**% change**
Control	18.14±0.80	15.23±0.61	-
Test-*A.siliquosa*	11.37±0.29	11.05±0.56**	27.44↓

Data: MEAN ± SEM. **p<0.01-compared with control

The data shows there was decrease in food consumption during therapeutic phase in *A.siliquosa* when compared to the therapeutic phase of control drug, the observed decrease was found to be statistically extremely significant.

The data related to the effect of *A.siliquosa* test formulation on food consumption on the basis of relative value have been summarized in the table.no.4.

Table 4 Effect of Aqueous extract of *Apama siliquosa.Lam* on food consumption with data presented in relative values

Group	**Food consumption in g/100 g (relative values)**		
	Preliminary phase	**Therapeutic phase**	**% change**
Control	7.06±0.28	6.30±0.17	-
Test-*A.siliquosa*	5.57±0.29	6.34±1.0	0.63↑

Data: MEAN ± SEM

The data showedthat there was increase in food consumption during therapeutic phase in *A.siliquosa* when compared to the therapeutic phase of control drug, the observed increase was found to be statistically non-significant.

The data related to the effect of *A.siliquosa* test formulation on water consumption on the basis of absolute value have been summarized in the table.no.5.

Table 5 Effect of Aqueous extract of *Apama siliquosa.Lam* on water consumption with data presented in absolute values

Group	**Water consumption in gms(absolute values)**		
	Preliminary phase	**Therapeutic phase**	**% change**
Control	31.79±0.96	21.58±0.91	-
Test-*A.siliquosa*	27.53±1.91	25.13±1.69	16.45↑

Data: MEAN ± SEM

The data shows there was increase in water consumption during therapeutic phase in

A.siliquosa when compared to the therapeutic phase of control drug, the observed increase was found to be statistically non-significant.

The data related to the effect of *A.siliquosa* test formulation on water consumption on the basis of relative value have been summarized in the table.no.6.

Table 6 Effect of Aqueous extract of *Apama siliquosa.Lam* on water consumption with data presented in relative values

Group	Water consumption in g/100 g (relative values)		
	Preliminary phase	**Therapeutic phase**	**% change**
Control	12.46±0.31	8.63±0.53	
Test-*A.siliquosa*	13.0±0.86	10.20±0.69 ##	18.31 ↑

Data: MEAN ± SEM. ##p<0.01-compared with preliminary phase

The data showed that there was increase in water consumption during therapeutic phase in *A.siliquosa* when compared to the therapeutic phase of control drug, the observed increase was found to be statistically non-significant. The data showed that there was decrease in water consumption during therapeutic phase of *A.siliquosa* when compared to the preliminary phase of *A.siliquosa*, the observed decrease was found to be statistically very significant.

The data related to the effect of *A.siliquosa* test formulation on urine output on the basis of absolute value have been summarized in the table.no.7.

Table 7 Effect of Aqueous extract of *Apama siliquosa.Lam* on urine output with data presented in absolute values

Group	Urine output in gms(absolute values)		
	Preliminary phase	**Therapeutic phase**	**% change**
Control	6.68±0.52	4.22±0.46	-
Test-*A.siliquosa*	8.28±1.67	6.10±0.94#	44.79↑

Data: MEAN ± SEM. #P<0.05-compared with preliminary phase.

The data shows there was increase in urine output during therapeutic phase in *A.siliquosa* when compared to the therapeutic phase of control drug, the observed increase was found to be statistically non-significant. The data showed that there was decrease in urine output during therapeutic phase of *A.siliquosa* when compared to the preliminary phase of *A.siliquosa*, the observed decrease was found to be statistically significant.

The data related to the effect of *A.siliquosa* test formulation on urine output on the basis of relative value have been summarized in the table.no.8.

Table 8 Effect of Aqueous extract of *Apama siliquosa.Lam* on urine output with data presented in relative values

Group	Urine output in g/100 g (relative values)		
	Preliminary phase	**Therapeutic phase**	**% change**
Control	2.73±0.30	2.26±0.56	
Test-*A.siliquosa*	4.04±0.77	3.11±0.39	0.38↑

Data: MEAN ± SEM

The data showed there was increase in urine output during therapeutic phase in *A.siliquosa* when compared to the

therapeutic phase of control drug, the observed increase was found to be statistically non-significant.

The data related to the effect of *A.siliquosa* test formulation on fecal wet weight on the basis of absolute value have been summarized in the table.no.9.

Table 9 Effect of Aqueous extract of *Apama siliquosa.Lam* on fecal wet weight with data presented in absolute values

Group	Fecal wet weight in gms(absolute values)		
	Preliminary phase	**Therapeutic phase**	**% change**
Control	7.47±0.33	7.09±0.54	
Test-*A.siliquosa*	5.58±0.20	4.95±0.36**	0.30↓

Data: MEAN ± SEM. **p<0.01-compared with control.

The data showed there was decrease in fecal wet weight during therapeutic phase in *A.siliquosa* when compared to the therapeutic phase of control drug, the observed decrease was found to be statistically very significant.

The data related to the effect of *A.siliquosa* test formulation on fecal wet weight on the basis of relative value have been summarized in the table.no.10.

Table 10 Effect of Aqueous extract of *Apama siliquosa.Lam* on fecal wet weight with data presented in relative values

Group	Fecal wet weight in g/100 g (relative values)		
	Preliminary phase	**Therapeutic phase**	**% change**
Control	3.48±0.18	3.3±0.12	-
Test-*A.siliquosa*	2.73±0.17	2.41±0.2**	0.27↓

Data: MEAN ± SEM. **p<0.01-compared with control

The data showed thatthere was decrease in fecal wet weight during therapeutic phase in *A.siliquosa*as compared to the therapeutic phase of control drug, the observed decrease was found to be statistically very significant.

The data related to the effect of *A.siliquosa* test formulation on fecal dry weight on the basis of absolute value have been summarized in the table.no.11.

Table 11 Effect of Aqueous extract of *Apama siliquosa.Lam* on fecal dry weight with data presented in absolute values

Group	Fecal dry weight in gms(absolute values)		
	Preliminary phase	**Therapeutic phase**	**% change**
Control	4.29±0.26	3.79±0.15	-
Test-*A.siliquosa*	2.97±0.11	2.38±0.11#**	37.20↓

Data: MEAN ± SEM. #p<0.05-compared with preliminary phase, **p<0.01-compared with control.

The data showed that there was decrease in fecal dry weight during therapeutic phase in *A.siliquosa*as compared to the therapeutic phase of control drug, the observed decrease was found to be statistically extremely significant. The data showed that there was decrease in fecal dry weight during therapeutic phase of *A.siliquosa* when compared to the preliminary phase of *A.siliquosa*, the observed decrease was found to be statistically significant.

The data related to the effect of *A.siliquosa* test formulation on fecal dry weight on the

basis of relative value have been summarized in the table.no.12.

Table 12 Effect of Aqueous extract of *Apama siliquosa.Lam* on fecal dry weight with data presented in relative values

Group	Fecal dry weight in g/100 g (relative values)		
	Preliminary phase	**Therapeutic phase**	**% change**
Control	1.79±0.08	1.56±0.06	-
Test-*A.siliquosa*	1.46±0.08	1.18±0.07#**	16.30↑

Data: MEAN ± SEM. #p<0.05-compared with preliminary phase, **p<0.01-compared with control.

The data showed there was increase in fecal dry weight during therapeutic phase in *A.siliquosa* when compared to the therapeutic phase of control drug, the observed increase was found to be statistically very significant.The data shows there was decrease in fecal dry weight during therapeutic phase of *A.siliquosa* when compared to the preliminary phase of *A.siliquosa*, the observed decrease was found to be statistically significant.

The data related to the effect of *A.siliquosa* test formulation on food conversion ratio on the basis of absolute values have been summarized in the table.no.13.

Table 13 Effect of Aqueous extract of *Apama siliquosa.Lam* on food conversion ratio with data presented in absolute values

Group	Food conversion ratio (absolute values)		
	Preliminary phase	**Therapeutic phase**	**% change**
Control	4.20±0.36	4.29±0.19	-
Test-*A.siliquosa*	4.11±0.10	5.15±0.30#*	20.05↑

Data: MEAN ± SEM. #p<0.05- compared with preliminary phase,*p<0.05- compared with control.

The data shows there was increase in food conversion ratioduring therapeutic phase in *A.siliquosa* when compared to the therapeutic phase of control drug, the observed increase was found to be statistically significant. The data shows there was increase in food conversion ratio during therapeutic phase of *A.siliquosa* when compared to the preliminary phase of *A.siliquosa*, the observed increase was found to be statistically significant.

The data related to the effect of *A.siliquosa* test formulation on food conversion ratio on the basis of relative value have been summarized in the table.no.14.

Table 14 Effect of Aqueous extract of *Apama siliquosa.Lam* on food conversion ratio with data presented in relative values

Group	Food conversion ratio in g/100 g(relative values)		
	Preliminary phase	**Therapeutic phase**	**% change**
Control	3.51±0.20	4.41±0.19	-
Test-*A.siliquosa*	4.07±0.09	4.99±0.33	13.15↑

Data: MEAN ± SEM

The data shows there was increase in food conversion ratioduring therapeutic phase in *A.siliquosa* when compared to the therapeutic phase of control drug, the observed increase was found to be statistically non-significant.

The data related to the effect of *A.siliquosa* test formulation on fecal water on the basis

of absolute value have been summarized in the table.no.15.

Table 15 Effect of Aqueous extract of *Apama siliquosa.Lam* on fecal water with data presented in absolute values

Group	Fecal water in gms(absolute values)		
	Preliminary phase	**Therapeutic phase**	**% change**
Control	4.23±0.16	4.29±0.24	-
Test-*A.siliquosa*	2.61±0.16	2.50±0.29**	41.96↓

Data: MEAN ± SEM, **p<0.01-compared with control.

The data shows there was decrease in fecal water during therapeutic phase in *A.siliquosa* when compared to the therapeutic phase of control drug, the observed decrease was found to be statistically extremely significant.

The data related to the effect of *A.siliquosa* test formulation on fecal water on the basis of relative value have been summarized in the table no.16.

Table 16 Effect of Aqueous extract of *Apama siliquosa.Lam* on fecal water with data presented in relative values

Group	Fecal water in gms(relative values)		
	Preliminary phase	**Therapeutic phase**	**% change**
Control	1.67±0.06	1.74±0.08	-
Test-*A.siliquosa*	1.18±0.23	1.32±0.18	0.25↓

Data: MEAN ± SEM.

The data shows there was decrease in fecal waterduring therapeutic phase in *A.siliquosa* when compared to the therapeutic phase of control drug, the observed decrease was found to be statistically non-significant.

Effect of Aqueous extract of Apama siliquosa.Lam on bodyweight of rats:

The data related to the effect of *A.siliquosa* on % change in body weight have been summarized in the table no 17.

Table 17 Effect of Aqueous extract of *Apama siliquosa.Lam* on bodyweight of rats

Group	% changes in body weight Mean ±SEM	% Change
Control	1.34±1.13	-
Test-*A.siliquosa*	-1.26±1.56	194.03↓

The data shows there was decrease in % change in body weight in *A.siliquosa* group when compared to control group, the observed decrease was found to be statistically non-significant.

DISCUSSION

Vipaka study:

Effect of A.siliquosa.Lam on metabolic parameters:

The consolidated results of the assessment of food & fecal matter of experimental rats have been depicted in the table no.18.

Table 18 Consolidated statement of Effect of *A.siliquosa.Lam* on metabolic parameters

Parameters	Absolute	Relative
Food Intake	SD	NSI
Water Intake	NSI	NSI
Urine Output	NSI	NSI
Fecal wet	SD	SD
Fecal dry	SD	SI
Food conversion ratio	SI	NSI
Fecal water	SD	NSD
Body weight	NSD	-

SI-Significant Increase
SD-Significant Decrease

NSI-Non Significant Increase
NSD-Non Significant Decrease

Food intake was decreased in absolute therapeutic phase and was statistically significant. Water intake was increased in all the days and was statistically non-significant. Urine output was increased in all the days and was statistically non-significant. Fecal wet was decreased in all the days and were found to be statistically significant. Fecal dry weight was decreased in absolute therapeutic phase and increased in relative therapeutic phase which was statistically significant. Food conversion ratio were increased in absolute therapeutic phase and were statistically significant. Fecal water was decreased in absolute therapeutic phase and was statistically significant.Body weight was decreased and were found to be statistically non-significant.

a) Effect on food intake:

Significant decrease in the food intake was observed during the study which was statistically significant. It may be because of *Tikta Rasa* (bitter taste) of the drug which is not palatable. It might have decreased the food intake.

b) Effect on water intake:

Significant increase in the water intake was observed during the study in both absolute value and relative value. It was statistically non-significant.

c) Effect on Urine Output:

Significant increase in the urine output was observed during the study in both absolute value and relative value. It was statistically non-significant.

d) Effect on fecal wet:

Fecal wet weight depends upon the food intake and its absorption in the body. On comparison of fecal wet with food intake, it was observed that there was significant decrease in fecal wet in absolute value because of decreased food intake. *A.siliquosa* was observed to have *Tikta Rasa* and *Kashaya Anurasa* and *laghu, Ruksha guna*. It may be the reason for decrease in the fecal wet weight.

e) Effect on fecal dry:

Fecal dry depends upon the food intake and its absorption in the body. On comparison of fecal dry with food intake, it was observed that there was significant decrease in fecal dry because of decreased food intake.

This could be because of *Tikta Rasa* and *Kashaya Anurasa* which has a property of *Upashoshana*. Hence there could have been decrease in the fecal dry weight.

f) Effect on food conversion ratio:

Food conversion ratio is the ratio which express the weight of food required to increase a unit gain in the weight of the animal. Significant increase of food conversion ratio was seen in *A.siliquosa*

aqueous extract induced test group which indicates more absorption of the food by the body.

Here it should be noted that the food conversion ratio increase depicted in the table no.18 are with reference to the effect comparison with control group absolute values.

It was observed that significant increase in food conversion ratio during therapeutic phase in *A.siliquosa* when compared to the therapeutic phase of control drug and significant increase in food conversion ratioduring therapeutic phase of *A.siliquosa* when compared to the preliminary phase of *A.siliquosa*, in the absolute values.

Careful analysis indicates that the food conversion ratio is comparatively lower in control group and is increased in the test group. In the test group in which the food conversion ratio was lower during preliminary phase in which drug was not given in comparison with the control group. This increased food conversion ratio was found to be significantly enhanced after drug administration.

According to the classicsthe drug which strengthens *Agni* and digests *Ama* is *Pachana*. The drug which will aid in the digestive process can be considered to possess *Pachana Karma*.[9] Here *A.siliquosa* aqueous extract induced test group showed significant increase of food conversion ratio which indicates more absorption of the food by the body. It clearly indicates that the drug *A.siliquosa* is having *Pachana* effect.

g) Effect on fecal water:

The value of fecal water was decreased in group was found to be statistically significant. The decrease in the fecal water content may be due to increase in absorption of water along with decreased intestinal motility.

h) Effect of body weight:

Decrease in body weight was observed during the study which was statistically non-significant which may be a resultant of decrease in the food intake. On feeding the experimental rats with their normal diet such as rat pellet, increase in body weight is expected. But after test drug administration body weight was found to be decreased.

Significant decrease in the food intake, fecal wet and fecal dry weight was observed from this study. Decrease in the body weight was also observed. It may be because of *Katu Vipaka.*

Analysis of the Vipaka:

Administration of *A.siliquosa* resulted in decreased body weight, decreased food intake with an increase in food conversion ratio. *Usna Veerya* and *Pachana Karma* of the drug is the cause for the increase in food conversion ratio. Decrease in the weight establishes the effect of *Katu Vipaka* on the body.

Rasapanchaka of A.siliquosa.Lam:

From the Taste threshold method it was found that *Apama siliquosa.Lam* is having *Tiktha rasa, Kashaya Anurasa.*By exothermic and endothermic reactions method it was found to be having*Ushna Veerya*. From the *Vipaka* study it was found to have *Katu Vipaka* and from *Deepana Pachana* study it was found to possess *Pachana Karma.*

According to the classics the dravya with *Katu vipaka* will have *Ruksha guna, Vata Vardhaka* property and does *Baddha Vinmutra*[10]. *Acharya Sushruta* mentions *Katu Vipaka* as *Laghu Vipaka*[11].Hence *A.siliquosa.Lam* might have *Laghu* and *Ruksha guna.* According to Acharya Charaka the dravya having *Tiktha Rasa, Katu Vipaka* should have *Sheeta Veerya*[12]. From the Pharmacognostical and experimental study *A.siliquosa.Lam* was found to have *Tikta Rasa, Katu Vipaka* and *Ushna Veerya*. We can observe that the drug comes under *Vichitra Pratyarabda.*

A.siliquosa.Lam was found to have *Deepana* property because of *Tikta Rasa, Pachana* property was proved from the metabolic study and *Ushna guna* from the *UshnaVeerya*.

The *Rasa Panchaka* of the drug *A.siliquosa.Lam* is tabulated in the table no.19

Table 19 *Rasa panchaka* of *Apama siliquosa.Lam*

Rasa	*Tikta*
Anurasa	*Kashaya*
Vipaka	*Katu*
Veerya	*Ushna*
Guna	*Laghu, Ruksha*
Karma	*Deepana, Pachana*

CONCLUSION

Evaluation of rasa in healthy volunteers, elucidation of *Veerya* by exothermic and endothermic reaction and assessment of *vipaka* by performing experimental study was done. From this preliminary assessment it may be concluded that the drug *Apama siliquosa.Lam* may possess *Tikta rasa, Kashaya Anurasa, Laghu Ruksha Guna, Ushna Veerya* and *Katu Vipaka,* thus identifying it as *Vichitra Pratyarabdha*drug.By these findings it can be understood that,if a drug is not known then enquiry into its ethno-botanical claims and assessment based on *Rasa, Guna, Veerya*and *Vipaka* becomes the guidelines for incorporating newer drugsto *Ayurveda* materia medica. Thus this study was reasonably successful in ascertaining some aspects of the *Rasapanchaka* profile. Experimental and clinical study can be taken for testing the efficacy of the drug for further study.

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