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Comparative pharmaceutical study of *Apamarga Kshara* prepared by *Jala* and *Gomutra*

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ABSTRACT

Kshara Kalpana is one amongst the various preparations used in Ayurvedic clinical practice. It is most widely used in surgical and para-surgical procedures. *Aacharya Sushruta* has included it under the heading of *Anushashtra*, *Upayantra*, *Agropaharneeya* and one among the *Upakrama* for *Vrana*. Its internal use has also been advocated by various classical texts. Many plants are mentioned for the preparation of *Kshara* by different classical texts. One of them is *Apamarga*. Its latin name is *Achyranthes Aspera* which is a herb about 0.33 to 1 meter in height with branched or unbranched stem. It is found all over India in dry lands. A typical processing technique is involved in the preparation of *Kshara*. We find references depicting different opinions for the preparation of *Kshara* in various classical texts. For the present study reference mentioned in *Sushruta Samhita* was followed. Here two solvents are mentioned for the preparation viz. *Jala* and *Gomutra*. To evaluate the difference between the pharmaceutical preparation of the two samples the present study was undertaken.

Key words: *Kshara, Apamarga, Jala, Gomutra,* Pharmaceutical preparation.

INTRODUCTION

Kshara is defined as a substance which does *Ksharana* and Kshanana.[1] According to *Aacharya Dalhana, Ksahrana* means to remove unhealthy tissue while *Kshanana* means it can injure healthy tissues.[2]

These definitions clearly indicate that *Kshara* should very clearly be applied over unhealthy tissues only without spilling it over healthy tissues. It causes *Ksharan* of the *Dushta Twak*, *Mamsa* and other *Dhatus* while it does *Kshanana* of the healthy tissues.

According to *Sushruta Samhita*; it is *Tridoshaghna*, *Ushna Veerya*, *Teekhshna*, *Saumya*, *Paachaka*, *Vilayaka*, *Shodhaka*, *Ropaka*, *Shoshaka*, *Lekhana*, *Krimighna*, *Aamhara*, *Khusthaghna*, *Medohara* and *Pumsatvahara.*[3]

According to *Charaka Samhita*; it is helpful in improving the digestion[4] but its extensive and prolonged use can cause vision impairment and reduced semen production.[5]

According to *Rasa Tarangini, Kshara* is helpful in conditions like Gulma, Arsha, *Grahani*, *Pleeha Roga*, *Mootra Krichhra* and *Ashmari*. It is also *Mootrala* in nature.[6]

In *Sushruta Samhita*, we get a list of the plants out of which *Kshara* can be prepared. One among them is *Apamarga*.[7] The synonyms of *Apamarga Kshara* are *Mayurakshara*, *Kharamanjari Kshara* and *Kini* Kshara.[8] The description of *Apamarga* is as under;

Botanical name: *Achyranthes aspera Linn.*

Family: Amaranthaceae

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English name: Prickly chaff flower

Classical name: *Apamarga*

Synonyms: *Pratyukpushpa*, *Sikhari*, *Kharmanjari*, *Kinihi*, *Adhahsalya*, *Mayuraka*.

Description : Annual-perennial herb with a erect, stiff, often a woody base. Stems are simple or branched from the base. Leaves are ovate-elliptic or ovate - rounded. Plant is variable in habit, size and shape of leaves, length of spikes.

Flowering and fruiting time: winter to summer season.

Distribution: Throughout India, plant is found commonly in waste lands, places and roadsides, hedges, gardens, fields or farms, forest clearings and other places.

Chemical Composition: The whole herb and seeds contain alkaline substance, especially potash.

Method Of Preparation

The method of preparation of *Kshara* has been elaborately described in different classical texts. We get references of *Kshara* preparation in

- *Sushruta Samhita*
- *Astanga Samgrah*
- *Astanga Hridaya*
- *Sharangdhara Samhita*
- *Rasa Tarangini.*

We find difference in the opinions of the various texts. For the present study method as mentioned in *Sushruta Samhita* was followed.

AIM OF THE STUDY

To prepare two samples of *Apamarga Kshara* using *Jala* and *Gomutra* as the solvent media. The reference followed is as mentioned in *Sushruta Samhita*.[9]

Collection of *Apamarga Panchanga*

The *Apamarga Panchanga* were collected from the herbal garden of the SDM College of Ayurveda, Kuthpady, Udupi, and the fields nearby the college premises. It was collected after proper botanical identification from the experts of Dravyaguna and Botany. The pharmaceutical preparation was carried out at Practical Laboratory of Department of Rasashastra and Bhaishajya Kalpana, SDM College of Ayurveda, Kuthpady, Udupi.

The total quantity of *Apamarga* Panchanga collected was around 12 kgs. It was then cut into small pieces with the help of a knife and was kept in six steel trays. These trays were kept under sunlight daily for a total duration of 20 days till the *Apamarga* got completely dried.

Preparation of ash of *Apamarga*

After complete drying, the weight of the *Apamarga Panchanga* was noted to be 8 kgs.

Name of the practical: Preparation of ash of *Apamarga*.

Reference: *Sushrut Samhita Sutrasthana*, chapter -11.

Date of starting : 08-03-16

Date of completion: 09-03-16

Amount of drug taken: totally dried *Apamarga* was taken in quantity of 8 kgs.

Apparatus required: A big iron vessel, weighing balance.

Procedure of ash preparation: A big iron vessel was taken and small amount of dried *Apamaraga Panchanga* was kept into it. It was then ignited with the help of a cloth dipped in tila taila. Once it caught fire small amount of *Apamarga Panchanga* was again put into it. Once whole sample got ignited it was observed that some of the particles were not completely burnt. Then this vessel was kept on the gas stove with blower attached to it. It was provided intense heat till we got completely light greyish ash.

It was then allowed to cool. Then the weight of this ash was calculated which was found to be 900 gms. This was then divided into two equal parts and kept in air tight containers.

Figure 1: Pictures depicting drying and preparation of ash of *Apamarga*

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Preparation of *Apamarga Kshara* with *Jala*

Name of the practical: Preparation of *Apamarga Kshara* with *Jala*.

Reference: *Sushrut Samhita*, *Sutrasthana*, chapter-11.

Date of starting: 10-03-16

Date of completion: 10-03-16

Amount of ash taken: 450 gms.

Apparatus used: iron vessel (*kadhai*), measuring jars, weighing balance, plastic containers, stirrer, knife.

Procedure: The ash was taken in a plastic container and it was mixed with six times (2700ml) of *Jala*. It was then stirred well by the stirrer for some time and was allowed to stand. By this the part of ash which didn't dissolve in *Jala* settled down. The supernatant *Jala* was filtered through a clean cloth in another plastic container. The process of filtration was repeated for 21 times.

The filtrate thus obtained was then kept in an iron vessel and kept over gas stove. Mild fire was maintained. It was heated till it attained a frothy consistency and no water was visible. Then this iron vessel was immediately taken out in sunlight and was allowed to dry. The white substance, *Kshara* was seen adhering to the base of the vessel. It was then carefully scrapped with the help of a knife. It was in the form of flakes. The *Kshara* thus obtained was weighed and immediately kept in air tight container. The quantity obtained was 195 gms.

Figure 2: Pictures depicting preparation of *Apamarga Kshara with Jala*

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Preparation of *Apamarga Kshara* with *Gomutra*

Name of the practical: Preparation of *Apamarga Kshara* with *Gomutra*

Reference: *Sushrut Samhita Sutrasthana*, chapter -11.

Date of starting: 11-03-16

Date of completion: 11-03-16

Amount of ash taken: 450 gms

Apparatus used: iron vessel (*kadhai*), measuring jars, weighing balance, plastic containers, stirrer, knife.

Procedure: The ash was taken in a plastic container and it was mixed with six times (2700ml) of freshly collected *Gomutra*. It was then stirred well by the stirrer for some time and was allowed to stand. By this the part of ash which didn't dissolve in *Gomutra* settled down. The supernatant *Gomutra* was filtered through a clean cloth in another plastic container. The process of filtration was repeated for 21 times.

The filtrate thus obtained was then kept in an iron vessel and kept over gas stove. Mild fire was maintained. It was heated till it attained a frothy and slimy consistency and no liquid part was visible. Then this iron vessel was immediately kept in sunlight till the slimy part got dried completely. The brown substance, *Kshara* was seen adhering to the base of the vessel. It was then carefully scrapped with the help of a knife. It was in the form of flakes. The *Kshara* thus obtained was weighed and immediately kept in air tight container. The quantity obtained was 280 gms.

Figure 3: Pictures depicting preparation of *Apamarga Kshara with Gomutra*

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Precautions

- Direct contact with *Ksharodaka* or Kshara should be avoided. It may cause burning sensation and produce cuts in the skin.
- The metallic vessels should be immediately washed after use as this Kshara, as it will corrode the metal and produce holes in it.

Observations

- Both the samples took almost same time for complete preparation.
- Quantity of *Kshara* obtained from *Gomutra* was more.
- *Kshara* obtained from Gomutra was brown in colour and smelt like *Gomutra* only.
- It was difficult to remove the last moisture content from the *Gomutra* sample.
- Very low flame should be maintained when the procedure is about to complete.
- If *Gomutra* sample is heated further then it turns into a black charred mass. It doesn't turn white in colour.

Results

The results are mentioned as below -

- Total quantity of dried *Apamarga Panchanga* – 8 kgs
- Total quantity of ash obtained – 900 gms
- Ash taken for *Jala* sample – 450 gms
- *Kshara* obtained (*Jala* sample) – 195 gms
- Ash taken for *Gomutra* sample – 450 gms
- *Kshara* obtained (*Gomutra* sample) – 280 gms.

Organoleptic Characters

Table 1 : Showing organoleptic characters of the two samples

S.No.	Characteristics	*Jala* Sample	*Gomutra* Sample
1.	Colour	White	Brown
2.	Odour	Specific	Gomutra smell
3.	Appearance	Solid flakes	Solid flakes
4.	Taste	Alkaline	Alkaline (strong)

Discussion

Kshara is considered as one of the most important means of parasurgical procedures as it pacifies all the three *Doshas* and performs actions like excision, incision and scrapping. Due to these properties of *Kshara* it is considered to be superior among both *Shastra* and *Anushastra*.[10]

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Kshara is an integral part of the *Ksharasutra* which is now widely being used in the management of ano-rectal disorders like haemorrhoids and fistula-in-ano. The external application of *Kshara* has been advocated in the management of conditions like *Kushta*, Kitibha, *Kilasa* and *Dushta Vrana*.

Preparation of *Kshara* involves a typical process. Various references are available for the same. According to *Sushruta Samhita* the ash of the plant should be dissolved in six times of the solvent media and then it should be filtered 21 times. The filterate thus obtained should be subject to heat to obtain the *Kshara*. We get references of water and *Gomutra* as the solvent media here.[11] Any of these solvents can be used according to the availability and the need.

In *Astanga Hridaya* it has been told to use both *Jala* and *Gomutra* as the solvent media.[12]

We also get the reference of *Kshara* preparation in *Sharangdhara Samhita*. It is being told to dissolve the ash of the plant in four times of *Jala* and it should be kept undisturbed overnight. Then the supernatant *Jala* should be decanted and should be subjected for heating to get *Kshara*.[13]

Preparation of *Kshara* is also mentioned in recent books like *Rasa Tarangini*. Here it is told that the ash should be dissolved in four times of *Jala* and then it should be macerated well for three hours. Then it should be filtered through a three folded cloth. The filtrate thus obtained should be subjected to heat to get *Kshara*.[14]

For the present study the method mentioned in *Sushruta Samhita* was followed and two samples were prepared. The amount of *Kshara* obtained by *Gomutra* method was more than the *Kshara* obtained from *Jala*. The probable reason behind it could be the addition of some alkaline constituents from the *Gomutra* itself. Similarly the colour of the two samples was also different. Brown colour of *Gomutra* was seen in the *Kshara* also. To know the exact reason behind these changes it is necessary to subject the two samples for chemical analysis and also the *Gomutra*.

Conclusion

Kshara is widely practised clinically in cases of ano-rectal disorders. It is the chief component of *Ksharasutra* which has now become the preferred way of management of fistula-in-ano. Due importance has been given to the *Kshara* in all the *Samhitas*. Its properties and method of preparation are described in an elaborate manner. Out of the various methods mentioned any method can be opted according to the need and the feasibility. Results of the present study can be concluded as the amount of *Kshara* obtained is more in *Gomutra* method as compared to the *Jala* method. The organo-leptic characters are also different. *Jala* is commonly used as the solvent media in general preparation of *Kshara*. The *Gomutra* method can be considered to be better as far as the total yield of *Kshara* is taken into consideration.

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