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# Pharmaceutical and Analytical Study of *Apamarga Kshar*

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## ABSTRACT

*Kshar* is a substance which is capable for crumbing any abnormal wound or growth (“*Tatraksharanatkshananaadkshar”)* with wound healing property. The *kshar kalpana* is dealt with the pharmaceutical procedure of *kshar* preparation. Here the *kshar* is prepared by the traditional methods and standardized according to the standard parameters.

## KEYWORDS

*Apamarga* (*Achyranthes aspera), Kshar jal,* Standardization, A.P.I, A.F.I

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## INTRODUCTION

The substance that removes the vitiated debris of skin, flesh etc. (*Dusta Tvagmansadi*)[1] or the substance, which detoxify the *Dosha* (bodily humour), *Dhatu* (tissues) and *Mala* (excreta)[2] because of its *Ksharan* (corrosive) nature is known as *Kshara*. According to the Ayurvedic Formulary of India, *Kshara* is alkaline substance obtained from the ash of drugs[3]. According to *Sharangdhara Samhita* (Sh.Sm.M. 11/102- 103), dried parts of plants which exude milky sap are burnt into ash form in fire. The ash thus obtained is dissolved in four times of water in mud pot and kept overnight. Next morning the clear supernatant water is decanted out into a clean vessel and boiled till all the water evaporates, leaving of a fine white powder at the bottom. This is known as *Kshara*[4].

## MATERIALS AND METHODS

Preparation of *Apamarga kshara* includes various steps like collection and authentication of the plant, drying, preparation of ash and finally preparation of *kshara* **(Fig 1-5)**

**Collection of *Apamarga panchanga***

Fresh matured *Apamarga panchanga* (whole plant of *Achyranthes aspera*) was collected during the month of September. Authentication of *Apamarga* was done by the experts of Dravyaguna on the basis of its Pharmacognostical characters (Authentication no: RUBL211605). It was then dried completely in sunlight for one week.

**Preparation of *Apamarga kshara***

**Date of Commencement:** 4/10/2016

**Date of Completion :** 16/10/2016

**Equipment's :** Iron Pan, Stainless Steel Vessels, Muslin cloth, Sieve, Glass Beaker, Weighing Machine, Gas Stove, Spatula, Mortar & Pestle.

*Apamarga kshara* was prepared following the classical method. Whole process was divided into three phases.

**1. Preparation of ash**

Matured *Apamarga Panchanga* was collected and dried completely in sunlight for one week. After removing the physical impurities; dried *Panchanga*was burnt completely by placing it in a big iron pan in open air.

**2. Preparation of *Kshara jala***

White ash (2.175kg) was taken in a stainless steel vessel. Instead of adding 6 times water (i.e. 13.05L) and filtering the supernatant liquid at a time it was decided to do add in different batches for better yield. Out of 13.05 L RO water, 6L water was added to the white ash for first wash. Then the mixture of ash and water was rubbed with hands for proper mixing and

**Fig 1** Driying of a *Amargarga*

**Fig 2** *Apamarga* ash

**Fig 3** :Macceration of ash

**Fig 4** Kshar jal

**Fig: 5** Preparation of Apamarga Kshar

left undisturbed for overnight. Next day the clean supernatant liquid was decanted through saline tube and then it was filtered through a three layered muslin cloth.The filtering process was repeated for twenty one times and the filtrate was kept separately in a stainless steel vessel. To the residual ash again 4 L RO water was added(out of the remaining 7.05 L), rubbed properly and kept undisturbed overnight, followed by the collection of second filtrate. Remaining amount of water (3.05L) was added to residual ash and the same method was followed for the 3$^{rd}$ time to collect the third filtrate.

### 3. Preparation of *Kshara*

All the three filtrates (of *Ksharajala*) were separately subjected to heat over the gas stove to evaporate the water content and to obtain *Kshara*. It was stirred continuously to prevent bumping. Finally, a dull white colored Kshara deposited as flakes was

collected from the bottom of the vessel and was ground into a fine powder. It was then packed in tightly closed container to protect from light and moisture.

## OBSERVATION AND RESULT

- *Apamarga panchanga* burned quickly and easily as it was completely dried.
- The powder of ash obtained was whitish with a characteristic taste.
- After addition of water, *kshara jala* was salty and yellowish in color.
- A saline tube was used to collect maximum volume of *Kshara jala* without disturbing sediment part.
- The yellowish liquid slowly turned to brownish semisolid mass with aggregation and creaking sounds during heating.
- Colour changed from yellowish to brownish gradually as temperature was raised. Kshara was started sticking to the vessel in final stage and bumping was observed. It was stirred continuously to prevent bumping and sticking at final stage. Finally a dull white coloured *Kshara* was obtained.
- On continuous heating bumping was observed and the brownish semisolid mass started adhering to the walls of vessel and bumping. It was stirred continuously to prevent bumping and sticking.
- In the final stage semisolid mass changed to white powder form.
- Repeated washings instead of adding 6 times water at once helped in obtaining maximum yield of *kshara.*

**Table 1** Observations and results obtained during preparation of *Apamarga*ash

| | | |
|---|---|---|
| **1.** | Weight of fresh Apamarga Panchanga | 40 kg |
| **2.** | Weight of dried Apamarga Panchanga | 17.4 kg |
| **3.** | Loss of weight after drying | 22.6 kg |
| **4.** | Quantity of Apamarga ash obtained | 2.175 kg |
| **5.** | Percentage of Apamarga ash | 12.5 % |

**Table 2** Observations and results obtained during preparation of *Apamarga kshara*

| | First Wash | Second Wash | Third Wash | Total Three Washes |
|---|---|---|---|---|
| Quantity of water added | 6L | 4L | 3. 05L | 13.05L (6 times) |
| Apamarga Kshara obtained | 496.6 g | 232.8g | 77.6g | 807g |
| Percentage of Apamarga kshara | 22.4% | 10.5% | 3.5% | 36.4% |

## ANALYTICAL STUDY

Ayurveda has been serving the ailing population since centuries and is still catering to the health needs of a large population of the world. A key obstacle which has hindered the acceptance of this traditional system of medicine in the developed countries is the lack of documentation and rigorous quality control.

Any medicine is always mandatory to be of highest quality, and hence to check the quality of the finished products and to prove the safety of the drugs on the basis of scientific evidence, it has become

essential to develop reliable and specific and quality control methods using a combination of classical and modern instrumental method of analysis. Standardization is an essential measurement for ensuring the quality control of the herbal drugs. The term "Standardization" is used to describe all measures, which are taken during the manufacturing process and quality control leading to a reproducible quality.

Since the quality of final product depends on the raw material selected, standardization should not be limited to the final product alone. Quality assurance of raw material and in process standardization is also equally important. Geographical and seasonal variations of the raw drug make the analytical study a herculean task. Also the herbal drugs, singularly and in combinations, contain numerous compounds in complex matrices in which no single active constituent is responsible for the overall efficacy. This again creates another challenge in establishing quality control standards and standardization of herbal drugs. With this backdrop, an attempt has been made to lay down the standards for the trial drug *MriduApamargakshara* ,*Apamarga* -whole plant used for *kshara* preparation and *Apamarga* ash.

**Analytical parameters**

Parameters were taken according to "Protocol for testing of Ayurvedic, Siddha, and Unani Medicines"published by Government of India, Department of Ayush, Ministry of Health and Family Welfare, and Pharmacopoeial Laboratory For Indian Medicines, Ghaziabad. The tests were carried out at S.R Labs, Jaipur.

*Apamarga* -whole plant, *Apamarga* ash and *Apamargakshara were subjected to* various analytical parameters as follows.

- Organoleptic parameters like *Color, Odor, Taste, Appearance*
- Physico-chemical parameters like Loss on drying, Ash values, pH, Extractive values
- Assay for Sodium,Potassium and Iron
- TLC (whole plant)

## DISCUSSION

In Samhita period detailed descriptions of *Kshara Kalpana* regarding their methods of preparation, definition, varieties, properties and applications were found[4,5,6]. Method of preparation of *kshara kalpana* was found different in various classics .So in the present study the main endeavor was to establish Standard operative procedures in preparation of Apamarga Kshara . By doing the above pharmaceutical procedure the *Apamarga kshar* was equivalent with the standard quality mentioned in

Ayurvedic Pharmacoepeia[7], which was determined by the above analytical test.

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