



## PHARMACEUTICAL AND PHYSICOCHEMICAL EVALUATION OF PALASHA MRUDU KSHARA

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### ABSTRACT

**Background:** Kshara is a caustic, alkaline in nature obtained from the ashes of medicinal plants used in treatment of various ailments.<sup>[1]</sup> In *Sushruta Samhita* Palash Kshara is mentioned for various ailments of disease such as *Agnimandhya*, *Gulma*, *Plihayakrityvridhi*, *Mutrakrucca*, *Anah*, *Grahni*, *Visuchika*, *Sarkara*.<sup>[1]</sup> However, Pharmaceutical and physicochemical Study of Palash Kshara is necessary to establish evidence based medicine whenever we are using it for clinical application to prove its efficacy. **Objectives:** Preparation and analytical study of *Palasha Mrudu Kshara* to understand its characteristics. **Material and Methods:** Logs of *Palasha* wood was collected from the natural habitat and dried completely. Identification and authentication was done at AYUSH approved drug testing laboratory and *mrudu kshara* was prepared as per the Ayurveda classics.<sup>[2]</sup> Prepared *Kshara* was subjected to organoleptic characters and physico-chemical parameters. **Results and Conclusion:** The study clearly revealed that *Kshara* obtained from completely dried stems of *Palsash* showed pH of 8.6 with presence of sodium, potassium and Sulphates ions.

**KEYWORDS:** *Palasha Mrudu Kshara*, *Butea monosperma*, Physico-chemical analysis.

### INTRODUCTION

*Kshara* are the derivatives of plant drug ashes in the form of solutions, powder or crystals, all of which have the basic quality of being alkaline. *Sushruta* has narrated *Kshara* in scope of *Shalyatantra*.<sup>[1]</sup> *Kshara karma* holds its prime importance among para-surgical procedures, as it is said to be an ultimate treatment for many of the ailments or disorders i.e., the diseases which are difficult to treat can be cured by *Kshara karma*.<sup>[3]</sup> A wide description is available about the *Kshara* which is alkaline in nature, can be used in different forms like liquid (*Paneeya Kshara*), powder (*Mrudu Pratisaraneeya Kshara*), paste (*Teekshna Pratisaraneeya Kshara*) and in the form of medicated thread (*Kshara Sutra*). As per the mode of use, it is mainly classified as *Paneeya Kshara* (internal administration) and *Pratisaraneeya Kshara* (external application).

*Pratisaraneeya Kshara* is again classified into 3 types based on its potency – *Mrudu*, *Madhyama* and *Teekshna Kshara*.<sup>[4]</sup> For internal administration it is made for the disorders like *Mutrashmari* (Renal Calculi) etc. and as application in *Arsha* (Haemorrhoids) etc.<sup>[5]</sup> *Kshara sutra* (medicated alkaline thread) has gained its popularity over these years as it is widely accepted and practised in Ano-

rectal diseases like *Bhagandara* (Fistula-in-ano), *Nadivrana* (Sinus) etc.<sup>[6]</sup> Hence the study is undertaken to prepare *Mrudu Kshara* and subjected it to pharmaceutical and physico-chemical study.

### MATERIALS AND METHODS

*Palasha Mrudu Pratisaraneeya Kshara* was prepared and subjected to Organoleptic and Analytical tests.

**Drug Procurement** – Logs of *Palasha* wood (Figure 1) was collected from natural habitat. Authentication was done at Ayush approved drug testing laboratory.

### Preparation of *Palasha Mrudu Kshara*

*Palasha* (10 kg) was properly dried, spread on even land, cut into small pieces and heaped together, it was then ignited and burnt into ash (Figure 2) and was collected separately (1 kg). Obtained ash was dissolved in 6 parts of water and left undisturbed overnight. Next day the supernatant fluid was taken in a separate vessel and the residue was discarded. Supernatant fluid was then filtered 21 times through a four folded cotton cloth and the obtained filtrate (Figure 3) was treated on mild fire while slowly stirring by a ladle. When it was clear, red, sharp and slimy, it was re-filtered and the residue was

discarded. Obtained filtrate was again placed on fire and heated till all the filtrate gets evaporated and *Kshara* deposited as flakes at the bottom of the vessel. Collected *Kshara* grinded it to a fine powder (Figure 4) and stored in an air tight container [Table 1].

**Table 1: Observations during the Preparation of *Kshara*.**

Weight of Logs of wood of <i>Palasha</i>	10 Kg
Weight of ash obtained	1 Kg
Amount of water used to mix the ash	5.2 Litre
Obtained filtrate	3.4 Litre
Time required to evaporate the water	4 hours 20 min
Weight of <i>Kshara</i> obtained	50 gm

#### Tests for Physical properties of *Palasha Mrudu Kshara*

In an ancient classics description about the evaluation of physical properties by some of the physical parameters have been mentioned as colour, touch, taste and odour with the help of sense organs. Such physical examination of prepared drug is mentioned in *Ayurvedic* classics to check the properties and qualities of the products. The obtained results of physical properties of *Palasha mrudu kshara* are compared to general characteristics of *Kshara* given in *Sushruta Samhita*. As per *Sushruta Samhita*, *Kshara* possess the following properties –*Shukla varna, Soumya, Tridosaghna, Katu-Ushna-teekshna guna*.

#### Physico-chemical tests

##### pH of *Kshara*<sup>[7]</sup> [Table 3]

The pH value conventionally represents the acidity or alkalinity of an aqueous solution. In the Pharmacopoeia standards and limits of pH have been provided for those Pharmacopoeia substances in which pH as a measure of the H<sup>+</sup> ion activity is important from the standpoint of stability or physiological suitability. The determination is carried out at a temperature of 25°C (± 2°C).

**Apparatus** - Glass electrode, a reference electrode and pH meter.

**Procedure** - Immerse the electrode in the solution under examination and measure the pH at the same temperature which was used for standard solutions. At the end of the set of measurements, record the pH of the solution used to standardize the meter and the electrodes. If the difference between this reading and the original value is greater than 0.05, the set of measurements is repeated.

##### Loss on Drying (LOD)<sup>[8]</sup>

This test is conducted to evaluate the moisture content of the sample drug.

**Procedure:** Petri dish is to be cleaned with distilled water and dried in oven at 105°C for 2 hours. One gram of drug sample is taken in a pre-weighed dried Petri dish. It is to be dried in oven at 105°C till a constant weight is reached. The Petri dish is to be taken out, self-cooled and

weighed immediately. The weight loss, i.e. loss on drying is calculated and expressed as % w/w.

##### Ash Value<sup>[9]</sup> [Table 3]

This test is conducted to evaluate the ash content of the sample.

**Procedure:** The crucibles are initially cleaned with distilled water and dried in oven at 105° C for 2 hours. One gram accurately weighed sample is taken in a pre-weighed dried crucible and incinerated in a muffle furnace up to 600° C. The crucible is then taken out, self-cooled and weighed immediately. The percentage of ash obtained is calculated from the weight of the ash obtained and expressed as % w/w.

##### Acid Insoluble Ash<sup>[10]</sup> [Table 3]

The acid insoluble ash content test is conducted to assess the percentage of inorganic content of the sample which is insoluble in dilute acid.

**Procedure:** The ash of the test drug is to be taken with 25 ml dilute HCl in a 100 ml beaker, boil for few minutes and cooled. Then filtered through filter paper No.41 (ash less) and washed with distilled water repeatedly till it became chloride free. The filter paper in the glass funnel, along with its residue is to be kept for drying in the oven. The dried paper along with the residue is then shifted to a pre-weighed crucible and kept in muffle furnace and heated up to 600°C. On cooling, it was weighed and the acid insoluble ash content is calculated from the weight of residual obtained and expressed as % w/w.

*Palasha mrudu kshara* was evaluated with the organoleptic characters for form, colour, taste and odour in the quality control laboratory.

**Table 2: Shows the obtained results of the organoleptic examination.**

Organoleptic Characters	
Macroscopic Description	Results
Form	<i>Churna</i> (powder)
Colour	Pale yellow
Taste	Sour
Odour	Odourless

Physico-chemical characters like pH, loss on drying, ash value and acid insoluble ash were tested in quality control laboratory.

**Table 3: Value of Physico-chemical characters of *Palasha mrudu kshara*.**

Physico-Chemical Standards	
Tests	Results
pH Value	8.6
Ash Value	82.318%
Acid Insoluble Ash	13.850%

Qualitative Estimation of the *Palasha mrudu kshara* was done for various ions.

**Table 4: Results of Qualitative tests for various ions present in the *Palasha mrudu kshara*.**

<b>Qualitative Analysis for Inorganic Elements</b>	
Calcium - Absent	Chloride - Absent
Magnesium - Absent	Nitrates - Absent
Sodium - Present	Sulphates - Present
Potassium - Present	Carbonates - Absent
Iron - Absent	Phosphate - Absent



**Figure 1: Logs of Palasha**



**Figure 2 :Ash of Palasha**



**Figure 3: Filtrate of Palasha**



**Figure 4: Palasha Mrudu Kshara.**

## DISCUSSION

*Sushruta* has mentioned 23 drugs for the preparation of *Kshara*. *Palasha* is one among them. As it is easily available and it yields more ash, the drug has been selected for the study. The drug should be used in dried form for proper burning and to get the optimum quantity of ash. Ash and water ratio used was 1:6 and properly mixed so that ash gets dissolved in water properly. To obtain the *Kshara jala*, ash mixed in water should be kept undisturbed overnight i.e., minimum 12 hours' time will be required for the ash to get settled at the bottom of the vessel and the supernatant fluid collected separately is called as *Kshara jala*. This supernatant fluid is filtered for 21 times so that all the insoluble particles can be removed completely. The obtained filtrate was treated on mild fire to avoid overheating. As heating continues the

colour of fluid changes from colourless to slight brown and becomes more clear, sharp and slimy. When all the fluid evaporates, *Kshara* gets collected at the bottom of the vessel. The colour of obtained *Kshara* was pale yellow and pH of *Mrudu Kshara* was 8.6. Qualitative estimation shows the presence of Sodium, Potassium and Sulphates.

## CONCLUSION

In this study, the *Palasha Mrudu Kshara* prepared was in *Mrudu* form and shows presence of Sodium, Potassium and Sulphates and pH of which was 8.6. As being *Mrudu* in nature it can be widely used in many ailments such as Chronic non-healing wounds, especially in case of slough and purulent discharge, as it is capable of performing surgical procedures like *Chedana*, *Bhedana*,

*Lekhana*, etc. It can also be used in the preparation of *Kshara sutra*.

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