



Original Article

Pharmaceutical and Analytical Study on *Panaviraladi Kshara*

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Abstract

Bhaishajya Kalpana is a branch of Ayurveda which deals with the source, descriptions and the art of producing various pharmaceutical preparations by following several processes by which it becomes easily digestible, therapeutically more effective and stable for a long period. Among all these preparations *Kshara Kalpana* enjoys due respect in the Ayurvedic pharmacy. *Ksharas* are the ashes of herbal drugs or derivatives of such ashes in the form of solutions or crystals and used in many disorders. The present study is concerned with the formulation *Panaviraladi Bhasma* mentioned in *Sahasrayogam* and *Chikitsamanjiri*, the traditional Malayalam publications. Some of the Folk practitioners & Ayurvedic Physicians of Kerala use this *Yogam* to treat the *Sotha* (bodily swelling). However till now no scientific studies have been carried out with respect to its preparation and analysis. Hence special emphasis was given to convert the *Bhasma* form into *Kshara* form according to standard preparation methods and was analyzed. *Ksharas* of *Panaviral*, *Kokilaksha*, *Apamarga* & *Kadalikanda* were prepared individually by *Samanya Kshara Nirman Vidhi* taking ash water proportion as 1:6 and mixed together in equal proportion to prepare the *Panaviraladi Kshara*. The organoleptic properties of the drugs revealed that the colour of the drug to be white, having metallic smell, pungent & salty taste and smooth touch. Ion exchange chromatography, Conventional titrometry and atomic absorption spectrophotometry study showed the presence of sodium (8.01%), potassium (13.5%), chloride (13.4%) sulphate (10.9%) carbonate (21.9%) phosphate (0.14%) and iron (0.006 %) respectively. The values which have been obtained through this analysis may serve as the standard parameters for genuine preparation of the *Panaviraladi Kshara*.

Key words – Pharmaceutical Study, *Kshara Kalpana*, *Panaviraladi Kshara*, Analytical Study

Introduction:

Ksharas are the ashes of herbal drugs or derivative of such ashes in the form of solutions or crystals. All of which have the basic quality of being alkaline .According to their state, liquid or solid they are called as *Drava Kshara* or *Choorna Kshara* [1].

Ksharas can be used internally as well as externally. Where Acharya Charaka has used *Ksharas* internally, Acharya Susruta and Vaghbata have given wide account of *Kshara*& divided it into *Antaparimarjan* and *Bahyaparimarjan* or *Paneeya* and *Pratisarneeya Kshara*. The *Pratisarneeya Kshara* was applied externally in cases of *Kustha*, *Kitibha*, *Shwitra*, *Nadivrana Bhagandara*, *Arsha*, *Arbuda*, *Dusta Vrana*, *Mashaka*, *Mukharoga* whereas *Paneeya Kshara* was applied used internally

in cases of *Gulma*, *Udara*, *Ajirna*, *Agnimandya*, *Ashmari*, *Abhyantara Vidradhi*, internal piles successfully [2,3]. Since the variety of substances is used for the preparation of *Kshara* it is *Tridoshaghna*. Owing to their white colour they are included in the *Saumya Dravya* group. Even though it is *Saumya* in nature, it is capable of carrying out cauterization (*Dahan*), digestion (*Pachan*), splitting (*Daran*) etc, as it is mainly made up of the drugs predominantly having *Agni Guna*. But on prolonged administration they destroy the sexual potency. *Acharyas* have considered *Kshara* to be superior to others due to following reasons [4].

- I) The *Ksharas* are superior to *Shastras* & *Anushastras* because of the capability to perform excision (*Chedan*), Incision (*Bhedan*)

& scrapping (*Lekhan*)

ii) *Kshara Karma* is a treatment of choice where surgical procedures become crucial such as *Nasarsha*, *Nasarbuda* where surgical treatment fails and in non-healing ulcers (*DustaVrana*)

Considering these facts *Panviraladi Bhasma* is converted into *Kshara* form by *Kshara* preparation method.

Materials and Methods:

Aim: The formula selected for the study is from the reference found in Chikitsa Manjiri [5] and Sahasrayogam [6] as *Panaviraladi Bhasma* and its use is mentioned in *Bhasma* form. The aim was to convert the *Bhasma* form into *Kshara* form and to conduct its analytical study. *Panaviraladi Kshara* is a compound formulation containing *Panaviral Kshara*, *Kokilaksha Kshara*, *Apamarga Kshara*, & *Kadalikanda Kshara* in equal proportion.

a) Collection of the drugs: The drugs of genuine variety were collected from the raw drugs unit, Government Ayurvedic Pharmacy, Thiruvananthapuram.

b) Equipments required: An iron vessel for incinerating the drugs, glass vessel, a piece of cloth, measuring glass, stirrer, heater, weighing balance.

c) Method of Preparation: The useful part of each drug from which the *Kshara* was to be prepared, was collected and washed with water, cut into small pieces, dried well and cleaned to remove extraneous materials. These pieces were put in an iron vessel and burnt into ash. The ash was allowed to cool and filtered through sieve. Distilled water was added to the ash in the ratio of 6:1 [7] and stirred well and allowed to stand undisturbed for 24 hours. The next day, the supernatant liquid was decanted out and strained through a clean piece of cloth 21 times successively to get a clear liquid. This liquid (*Ksharodaka*) was then taken in a glass vessel and heated over a mild fire till the water evaporated completely. The residue obtained known as *Kshara*, was then collected by scratching the surface of glass vessel with knife and stored in a glass bottle. The weight of the *Kshara* was taken by using a common balance.

Thus the *Ksharas* were prepared individually of all four drugs. For each *Kshara*, a sample of 100 gm ash was taken and the process was repeated 3 to 4 times [7, 8].

II. Analytical study: Analytical study was conducted to elucidate the composition & the structure of the drug. A complete chemical analysis of *Panviraladi Kshara* included identification of the

constituents by the qualitative analysis & the determination of their relative amounts present by quantitative analysis.

Formulation of Panaviraladikashara (P.K.):

Panaviraladi Kashara is compound formulation containing *Panaviral Kshara*, *Kokilaksha Kshara*, *Apamarga Kshara* and *Kadalikanda Kshara* in equal proportion. The name given to it combination is based on the first drug *Panaviral* in it. It is the Malayalam name which means inflorescence; its Sanskrit name is Tala.

Observations:

Characteristics and Preservation: P.K. is white in colour in the form of crystals. It is having metallic smell, pungent and salty taste and smooth touch. When exposed to the atmosphere, becomes moist and therefore it should be stored in air tight glass bottle. It can be last indefinitely without losing its potency.

Precautions:

- Distilled water was used for the *Kshara* preparation to avoid any impurities in the *Kshara*.
- Care was taken to avoid loss of *Ksharodak* while straining and boiling.
- Heat given was *Mandagni* throughout the process and kept as constant.

Analytical study:

Analytical study revealed the following various properties of the drug [13]

1. Organoleptic properties :

- a. Colour - Dull white
- b. Odour - Metallic
- c. Taste - Pungent
- d. Touch - Smooth

2. Litmus paper showed that the drug is alkaline in nature

3. Digital pH meter showed that the pH of P.K. is 10.8.

4. Loss on drying of P.K = 2.48%

5. Quantitative analysis by Ion exchange chromatography study showed the presence of sodium (8.01%) and potassium (13.5%)

6. Quantitative analysis by conventional titrometry showed the presence of Chloride (13.4%) sulphate (10.9%) and Carbonate (21.9%).

7. Quantitative analysis by atomic Absorption Spectrophotometry study showed the presence of phosphate (0.14%) and Iron (0.006%).

Discussion:

There are two varieties of *Kokilaksha* used in Kerala. In place of *Astercantha longifolia* Ness,

another plant named *Hygrifolia angustifolia* is found to be in practice. It is having the same local name *Vayalchulli* or *Karachulli*. But the plant differs in their morphological characters, especially the sharp six thorns present at the nodes. This indicates that the plant *Kokilaksha* is essentially having thorns, the thorn less variety seen in the market may be an adulterant or a substitute owing to its similar characters. For the study *Astercantha longifolia* Ness variety was used for the preparation of *Kshara*. To avoid any contamination, distilled water was used for the *Kshara* preparation. However, practically it is advisable to use rain water which is free from contamination and cheaper than distilled water to get *Kshara* with least impurities.

Under the pharmaceutical study *Ksharas of Panavirala, Kokilaksha, Apamarga & Kadali Kanda* were prepared individually by *Samanya Ksharanirman Vidhi* taking ash water proportion as 1:6. The % of *Kshara* obtained per 100 gm ash was nearly same for *Panavirala, Kokilaksha & Apamarga* ie. 20 gm/100 gm ash, where as it is more in *Kadali Kanda* may be *Panchanga* was used for the former three drugs and only *Kanda* was used for *Kadali*. It is however advisable to identify and use single part of the drug for the preparation of *Kshara*. As the *Kshara* is hygroscopic in nature, it should always be kept in an air tight glass container.

Pharmaceutical advantages of *Kshara* over *Bhasma* may be explained as –

- I. Processing could be done on bulk quantities with the aid of proper equipments as the drug is stable for long duration.
- ii. No need of preservatives.
- iii. Pharmaceutically elegant.
- iv. Ingredients are widely available and economic
- v. Drug potentiation and dose minimization.

Disadvantages:

Pungent and saline taste of the drug which can be masked by using proper adjuvant.

Analytical Study:

The rationality of any drug which is useful to our body will remain incomplete if the constituents of the drug are not known by the physician. This thought motivated to find out the chief constituents of *Panaviraladi Kshara* through analytical study. The study revealed the various properties of the drug. The various parametric values which have been obtained through this study may serve as the standard parameters of a genuine preparation of the *Panaviraladi Kshara*. The qualitative and

quantitative analysis proved the presence of various components in the drug and its percentage quantity within the drug.

The pH of the drug solution was 10.8 which mean that the drug was alkaline in nature.

Conclusion:

Panaviral Kshara is prepared by mixing the *Kshara* of *Panavirala, Kokilaksha, Apamarga & Kadali Kanda* in equal proportion. Due to its pharmaceutical advantage it is advisable to use *Kshara* in place of *Bhasma*.

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Panavirala (*Borassus flabellifer*)



Apamarga (*Acaranthus aspera*)



Kokilaksha (*Astercantha longifolia*)

Kadali (*Musa paradisiaca*)

Table I: Showing the pharmacological properties of ingredients of *Panaviraladi Kshara* [8]

S.N.	Sanskrit name	Botanical name	Family	English name
1.	Tala	<i>Borassus flabellifer</i> Linn	<i>Palmaceae</i>	Palm, Brab tree
2.	Kokilaksha	<i>Astercantha longifolia</i> Ness	<i>Acanthaceae</i>	
3.	Apamarga	<i>Achyranthus aspera</i> Linn	<i>Amaranthaceae</i>	Prickly chaff flower
4.	Kadali	<i>Musa paradisiaca</i> Linn	<i>Musaceae</i>	Banana, Plantain

Table II: Showing the pharmacological properties of ingredients of *Panaviraladi Kshara* [9]

S.N	Name of the Drug	Rasa	Guna	Veerya	Vipaka
1.	<i>Tala</i>	<i>Madhura</i>	<i>Snigdha, Guru</i>	<i>Seeta</i>	<i>Madhura</i>
2.	<i>Kokilaksha</i>	<i>Madhura</i>	<i>Guru, Snigdha</i>	<i>Seeta</i>	<i>Madhura</i>
3.	<i>Apamarga</i>	<i>Katu, Tikta</i>	<i>Laghu, Ruksha, Teekshna</i>	<i>Ushna</i>	<i>Katu</i>
4.	<i>Kadali</i>	<i>Kashaya , Madhura</i>	<i>Guru</i>	<i>Seeta</i>	<i>Madhura</i>

Table III: Showing the *Kshara* proportion of individual drug [10-12]

S.N.	Drug name	Part used	Weight of wet drug	Weight after drying	Gained ash (<i>Bhasma</i>)	Wet. Of ash/ kg	<i>Kshara</i> obtained /100 g ash
1.	<i>Tala</i>	<i>Talapushpa</i>	--	9 kg	405 g	45 g	20.33 g
2.	<i>Kokilaksha</i>	Whole plant	20 kg	6.3 kg	470 g	66.6 g	20.62 g
3.	<i>Apamarga</i>	Whole plant	10 kg	3.5 kg	307 g	87.71 g	19.66 g
4.	<i>Kadali</i>	<i>Kadali Kanda</i>	20 kg	2.75 kg	320 g	116.36 g	31.66 g