



Research Article

STANDARDIZATION OF PHARMACEUTICAL AND ANALYTICAL ANALYSIS OF *CHINCHA KSHARA*

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ABSTRACT

Acharya Susruta has narrated *Kshara* as one of the *Upayantras*, *Anusastras*, *Agropaharaniya* and one of the *Upakrama* of *Vrana*. *Kshara* is considered superior to all surgical and para surgical measures. *Ksharas* are more effective than other methods of treatment, because they can be used externally as *Pratisaraniya Kshara* and internally as *Paneeya Kshara*. Because of varied applications standardization of the compound formulation is the need of the present era to set standards for maintaining the quality of the products. In the present study work is done on the pharmaceutical and analytical study of *Chincha Kshara* conducted in the department of *Shalya Tantra* under the post graduate programme is being presented. Here an attempt has been made to study *Chincha Kshara* Analytically and to develop fingerprints by organoleptic tests, physico-chemical parameters and Inductively Coupled Plasma - Optical Emission Spectrometry (ICP-OES).

INTRODUCTION

Analytical studies are crucial for ensuring the standardization of drugs. It provides information about the safety, efficacy, stability, and contraindication of any formulation. The quality of the drugs, that is, the profile of the constituents in the final product, has implications for efficacy and safety. *Shalya Tantra* holds a significant position within Ayurveda as a branch that possesses its own unique characteristics and contributes to the advancement of modern medical information technology. The *Susrutha Samhitha* stands as the sole text available for surgical practice, providing comprehensive surgical techniques and para surgical measures. There are many diseases which are not curable with medicine are effectively treated by *Kshara*^[1]. Having various constituents, due to its multifold potentiality, *Kshara* is *Tridoshaghna* and *Sowmya*. It works as *Dahaka*, *Pachaka*, *Daraka* etc. Though being *Agneya* in nature, it is indicated in *Raktapitta*, *Arsha* and although it is having the properties like *Ksharana* it can be used orally. *Kshara*

because of its *Guna - Karma* has gained great importance in both *Shalya tantra* and *Kaya chikitsa*.

Chincha kshara is considered one among the *Kshara Ashtaka*^[2]. Acharya Charaka, Susruta and Vagbhata described the properties of *Kshara* in detail. *Chincha kshara* is prepared from *Chincha Phala twak* or *Kanda twak*. *Chincha kshara* possesses rich medicinal values and is used as an important ingredient in various formulations which are used in the management of *Shula*, *Agnimandya*, *Gulma*, *Mutrakricchra*, *Ashmari*^[3] etc.

Due to its diverse applications in numerous diseases for the purpose of establishing biological activity, maintaining a constant chemical profile, or ensuring product quality, standardising Ayurvedic formulations is important. Physico chemical parameters, organoleptic studies and ICP-OES are conducted to assess and understand the physio-chemical presence in the present formulation.

AIM AND OBJECTIVES

This study sought to develop a detailed profile of *Chincha Kshara* through analytical analysis.

Method of Preparation of *Chincha Kshara*

MATERIAL

Collection of Drug: Raw drugs for the preparation of *Chincha kshara* were collected from Kurnool district Andhra Pradesh and preparation was carried out in

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Materials: *Chincha phala twak* (*Rasatantrasara va siddhaprayoga sangraha*)

Chincha: Botanical name: *Tamarindus indica* linn
Family: Caesalpiniaceae

Principle: *Kshara Nirmana Vidhi* (Sushruta Samhitha Su. Su 11/11)^[4].

Apparatus: Gas stove, iron mesh, spatula, vessels, measuring jar, *Khalva yantra*

Method of Preparation

- *Chincha Phala twak* will be collected and completely dried.
- Then it will be placed over the hearth and subjected to fire till it gets converted in to ash.
- The ash will be collected in a stainless-steel vessel and allowed for self-cooling. Six parts of water will

- be added to the ash obtained.
- It will be kept undisturbed overnight then the supernatant water will be collected in another steel vessel carefully without allowing the sediments to enter (*Kshara jala*).
- It was filtered 21 times to get clean and clear solution like *Gomutravarna*.
- The collected supernatant water is heated under medium flame on a gas stove till the water content is completely evaporated.
- After the complete evaporation of water content, white coloured flakes (*Kshara*) will be obtained at the bottom of the vessel.
- They will be pounded in clean *Khalva yantra* and made into fine powder. It will be collected and preserved in air tight glass container.

Table 1: Showing the result of Preparation of Chincha Kshara

Weight of <i>Chincha Phala Twak</i>	Weight of the Ash	Weight of the <i>Kshara</i>
10 kg	305 g	120g

Images of Kshara Preparation



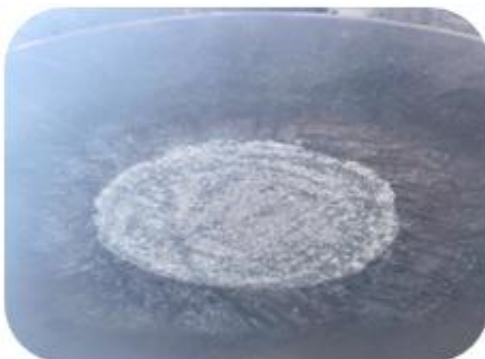
Dried *Chincha Phala Twak*



Subjected to fire



Allowing for self-cooling



Ash of *Chincha Phala Twak*



Ash of *Chincha* soaked in water overnight without disturbance



Collecting *Kshara jala* from the vessel



Gomutra varna kshara jala after 21 Filtrations



Kshara flakes obtained at the bottom of the vessel



Kshara collected in a glass vessel

Analytical Standardization of Chincha Kshara

Analytical study plays an important role in the standardization of the drugs. Ayurveda, the ancient system of medicine is gaining recognition throughout the world and many herbal, metal and mineral drugs are now clinically tested and accepted. Hence highly sensitive modern parameters are employed for gaining information about identity, form, physico-chemical properties, particle size, surface morphology and structure of contents of the formulation. All the analytical tests for this study, were carried out in Feed and Forage Analytical and Quality Control Laboratory, Department of Animal Nutrition College of Veterinary science, Sri Venkateswara University, Tirupati, Andhra Pradesh.

Analysis date: 23-08-2023

Analytical study was conducted under different headings, namely;

Methods opted for analysis

1. Organoleptic tests
 - a. *Sparsha*
 - b. *Rupa*
 - c. *Rasa*
 - d. *Gandha*

Physico chemical tests

- a. Moisture value
- b. Total ash value
- c. Acid insoluble ash value
- d. Water soluble ash value
- e. pH value

Inductively Coupled Plasma – Optical Emission Spectrometry (ICP-OES)

Organoleptic tests

Organoleptic tests help in providing basic information about drugs. This generally includes tests that can be done by one’s sensory organs and quality of material can be inferred up to limited extent.

Table 2: Showing result of organoleptic test of Chincha Kshara

S. No.	Parameter	Observation
1.	Colour	Greyish white or Ivory
2.	Odour	Characteristic
3.	Touch	Soft
4.	Appearance	Fine powder
5.	Taste	Salty

Physico- chemical tests

Physico-Chemical tests deal with primary physical and chemical properties of a sample, which can hint about the internal molecular behaviors at different natural conditions. It helps in understanding the stability and potency of a drug when it is stored for long time.

Table 3: Showing the results of physico chemical tests of Chincha Kshara

S. No.	Parameter	Chincha Kshara
A.	Moisture (%)	3.13
B.	Total Ash (%)	86.32
C.	Acid insoluble ash (%)	8.12
D.	Water soluble ash (%)	5.62

pH Value

pH test was carried out to know the nature of *Chincha kshara*. pH value of *Chincha kshara* is 9.27.

Inductively Coupled Plasma- Optical Emission Spectrometry

ICP-OES is one of the analytical tools for the determination of trace elements in a sample. The ICP was developed for optical emission spectrometry (OES) by Fassel et al. at low State University in the US and by Greenfield et al. at Albright & Wilson, Ltd. in the UK in the mid-1960s.

Principle

The technique is based upon the spontaneous emission of photons from atoms and ions that have been excited in a radio frequency discharge. Liquid and gas samples may be injected directly into the instrument, while solid samples require extraction or acid digestion so that the analytes will be present in a solution.

Table 7: Showing the results of ICP-OES analysis of *Chincha Kshara*

S.No	Name of the elements analyzed	Test results in mg/L
1	Lead	0.011
2	Mercury	NIL
3	Arsenic	NIL
4	Selenium	NIL
5	Boron	0.077
6	Calcium	27.47
7	Iron	2.412
8	Cadmium	0.005
9	Phosphorus	19.39
10	Potassium	15.50
11	Copper	0.110
12	Nickel	NIL
13	Sodium	NIL

DISCUSSION

Physico chemical tests of *Chincha Kshara* shows loss on drying 3.13 (%w/w), *Chincha Phala Twak* collected in dried form so the moisture % is less when compared to bark. Total ash 86.32 (%w/w) since the ash itself was taken for the preparation of *Kshara* there is presence of high number of inorganic contents in it, which was indicated by the high amount of total ash. Acid insoluble ash 8.12 (%w/w), water soluble ash 5.62 (w/w). The elements like sulphur and chlorine which was found in *Chincha Kshara* must have sublimated during the process of determination of total ash. Hence total ash was not totally hundred percent, though *Kshara* itself is water soluble content of ash itself.

Organoleptic properties of *Chincha kshara* are white colour fine powder with salty taste having characteristic odour and soft to touch. pH value indicates the degree of acidity or alkalinity of a sample. pH value of *Chincha kshara* is 9.27, alkaline in nature which is suitable for both internal administration and external application.

ICP-OES elemental analysis of the *Kshara* was performed to determine the trace metal composition and heavy metals As, Pb, Hg, Cd following the WHO

guidelines. Presence of potassium was common in all these herbal *Kshara* preparations. Other minerals like copper, lead, calcium, phosphorous are also seen in different proportions. The heavy metals were seen within the permissible limits in almost all these *Kshara* preparations.

CONCLUSION

Kshara is a unique kind of Ayurvedic dosage form, known for its *Chedana*, *Bhedana* and *Lekhana* properties. Application of *Kshara* as *Lepa* and ligature with *Kshara sutra* (thread smeared with alkali) in haemorrhoids, fistula in ano and sinuses are one of the most accredited therapeutic procedures in *Shalya Tantra*. *Kshara karma* has wide scope for clinical purpose and research in Ayurveda. More and more practice and training are required in this field. The result of present analytical study concludes that *Chincha kshara* has high alkaline nature. The analytical tests done in this study, only reestablishes the fact explained by our ancient *Acharyas* regarding the properties of *Kshara*.

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