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REVIEW ARTICLE

A CRITICAL REVIEW ON VARIOUS SOURCES USED IN THE PREPARATION OF SARJIKA KSHARA

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Abstract

An important dosage form in Ayurveda is *kshara kalpana.* It is one among the *anusastras* or accessory instruments for treatment especially diseases which require *chedana* or excision, scraping or *lekhana* In *Susruta samhita* and other *brhattrayees* much details are given about collection of plants for *kshara* preparation, methods of preparation, properties of *kshara* . Moreover in *Rasasastra* classics also information is available regarding method of preparation, sources, indications, dose and types of various *ksharas* . Among the different types of *kshara, here swarjika kshara* which has synonyms sarjika kshara is taken into consideration regarding the difference in sources of origin in the classics . A detailed review regarding *kshara,* its preparation, information about sources of *swarjika kshara* was done by referring classical ayurvedic textbooks and many *rasagranthas* like *Rasa Tarangini* etc. Two main plant sources and one mineral source have been mentioned in Ayurveda classics. As no available standards are present regarding the source for market samples of *sarjika kshara,* a standardization is a needed to compare the two main plant sources *Duralabha* and *Dhanvayaasa* mentioned in ayurvedic classicals as sarjika kshara source.

Introduction

Kshara kalpana is one of the important dosage forms in Ayurveda having unique method of preparation. *Acharyas Susrutha, Charaka* and *Vagbhata* have described about the importance of *kshara* and various methods have been described for the preparation of *kshara* in *Sharangadhara Samhita, Rasa Jala Nidhi, Ayurveda Sara Samgraha, Rasa Tarangini* and so on. *Kshara* is considered to be superior amongst *sastras* and *anusastras* because of its *chedana, bhedana* etc actions[1]. *Ksharakarma* has been considered as a wealth and weapon in Ayurvedic Pharmacopoeia.

In the Ayurvedic Formulary of India, *kṣhara* is defined as an alkaline substance obtained from the ash of drugs[2]. It can be used both externally and internally. *Kṣhara* is described as one among the *Anushastras* or *Upayantras*[3]. *Acharya Charaka* has described varieties of *kshara* and their application in various diseases and has considered it as one of the three fold treatment i.e.

Shashtra Pranidhana.[4] In *Harita Samhita, kshara karma* is included in the eight important types of treatment[5]. *Kshara* is also used as a contraceptive according to *Bhavaprakasha*.[6]

The diseases which are difficult to treat can be cured by *kṣhara* therapy. It minimizes the complications and also prevents recurrence of diseases. It can reduce the chances of post-surgical infections due to its alkalinity.[7] *Ksharas* can be used where *Shastra chikitsa* is contraindicated . For women, children or on those who are afraid of surgery, *ksharakarma* is more suitable.[7] *Kṣhara* is mentioned in different pharmaceutical processes like *sodhana,jarana, marana, sattvapatana* etc. to prepare formulations and used in different dosage forms.[8] kshara is also having antidote property [9]. *Sarjika kshara* is widely used in various purposes, as a *sodhana dravya,* as an ingredient in formulations etc but different sources are mentioned in *rasasastra* classics. According to *Rasa Jala Nidhi , Sarji mrt* is preferred but in its absence, *Sarjika kshara* can be prepared by processing both the ash of plants named *Dhanvayasa* (Fagonia cretica Linn.) and *Duralabha* (Tragia involucrata).

Aims and Objectives

To compare two source plants that are used for the preparation of *sarjika kshara.*

The present work aims to compile the literature about *kshara kalpana, sarjika kshara* in a scientific manner.

Materials and Methods

A detailed review regarding *kshara*, its preparation, review regarding sources of *swarjika kshara* was done by referring classical ayurvedic textbooks and many *rasagranthas* like *Rasa Tarangini, Rasa Jala Nidhi* etc. Recent ongoing research and articles related to kshara and swarjika kshara were considered for reviewing and these are presented in a systematic manner.

In *Rasa Tarangini, Rasamritam* and *Rasa Jala Nidhi*, *kshara* is described in separate chapters in a detailed way. The use of *kshara dravyas* in the *samskaras* of *parada* and *shodhana, marana* of *dhatus* are found in various *rasagranthas.*

In *Rasa Taraṅgiṇi,* method of preparation of *kshara,* its properties, indications and dose along with detailed description of *Yava kshara, Swarjika kshara, Apamarga kṣhara, Arka kṣhara, Tila kshara, Snuhi kshara, Palasa kshara, Cincha kshara* are mentioned.[10] Separate chapters detailing about *kshara traya* namely *Yava kshara, Swarjika kshara* and *Tankana* is explained. *Kshara dwaya, kshara traya, kshara panchaka* and *kshara ashtakas* are mentioned[10].

In *Rasa Hrdaya Tantra*[11], *Ayurveda Prakasha*[12] and *Ayurveda Sara Samgraha*,[13] the method of preparation of *kshara* has been mentioned.

In *Rasamritam*[14]*, Acharya Yadavji* Trikamji added a separate chapter on the context of *kshara varga; Yava kshara, Sarjika kshara* and *Tankana* are described along with *Sphatika* and *karpura shilajatu.* In *Rasa Jala Nidhi*[15]*,* it is described that the word *kshara* is derived from the root *'kshar'* meaning 'to remove'. The word is named so simply because it removes the *'malas'* or impurities. Details on *yava kshara* and *sarjika kshara* are quoted.

In other texts like *Sahasrayoga, Bhaishajya Ratnavali, Bharat Bhaishajya Ratnakara* etc. The references of different formulations are available in which *kshara* is used as an ingredient. In Ayurvedic Formulary of India (AFI), a separate chapter on *lavana kshara* has been included in AFI part I, 10th chapter.[1] In this book different formulations of *kshara* with references, doses, *anupanas,* therapeutic uses etc. are described.

Hence proper standardization is needed for the *sarjika kshara* due to the utility of *sarjika kshara* in various formulations*.* Since there is noticeable variation in the appearance of sarjika *ksharas* available in the market, a study was earlier conducted to compare physicochemical analysis of market samples of *sarjika kshara* with *kshara* prepared using Tragia involucrata

The list of machinery, equipments and minimum manufacturing premises required for the manufacturing of *kshara* is described in Drug and cosmetic rules 1945.

According to *Susruta***,** *ksharas* are *tridoshahara, soumya, pachaka, usna veerya, teeksna, vilayaka, shodhana, ropana, shoshana, lekhana, krimighna, amahara, kusthaghna, medohara* and *pumstva hara.*

Sarjikakshara

Synonyms[16]**:** *swarjika, swarji, swarja, suvarchika, sarji, suvarchaka, suvarchi, sukhorjika, kapotha, sukhavarcha, sukharjika, ruchakam, sauvarchalam.*

Vernacular names[17]**: English:** dhobi's earth, washing soda, salsoda, crude carbonate of soda, soda carbonate, barilla. **Persian:** Shikhara, tine-gazur **Arab:** Tile-milahul-gile Duk : Courka-namak, sajjinoon **Telugu:** Saviti-mannuppu **Tamil:** Choontoo-munnoo, sanchikaram **Hindi:** Sajji, sajjikhar **Bengali:** Sajiksara, sajimati **Marathi, Gujarathi**: Sajikhara **Malayalam; Tuvarchilakkaram**

Source and varieties: Various sources for *sarjika kshara.*

Mineral source: According to *Rasajalanidhi*, in certain hills

or places near to hills, layers of alkaline soil are found in abundance. This soil is called *sarjimrit*. It contains alkaline mud with foreign matter. Some quantity of this earth is to be dissolved with four times its weight of water. The solution is filtered several times through a piece of thick cloth. The solution thus filtered is then heated and condensed into solid alkaline substance called *sarjika kshara.*[18]

As per *Rasa Tarangini*, *ushtrapriya* i.e *kshudra duralabha* is mentioned for the preparation of *swarjika kshara*. The source drug is known by the name of *lana/ lona* in Punjab and Sindh. [16]

According to *Raja Nighantu commentary book by* Dr. Satish Chandra sankhyadhar, *sarjika kshara* is obtained from Chenopodiaceae, Salicorniaceae, salsolaceae groups of plants and sea weeds (Sevara). The sea weed ash is called Kelp and the ash of the above trees group is called Barilla, containing 25-40% of *sarji.* The trees are dried and put in a big pit, containing earthen ware. The tree wood is slowly heated, the liquid *sarji* is collected in those pots, and is termed as Lota sajji, which is usually obtained from Caroxylon griffithii and is considered the best.[19]

Sarji is also obtained from Reha or Washermans' clay collected from waste lands. This is abundantly available along the river basin, salt lands and may have upto 88% *Sarji* contents .[19]

Chemical composition sodium carbonate

According to Vishwanath Dwivedi *sarjika kshara* is a mineral drug[20]

Two plant sources: In the absence of *sarjimrit* as manufactured in the way stated above, physicians use a *kshara* prepared from the ashes of *duralabha* or kshudra *duralabha*.

Method of preparation: *Sarjikakshara* is prepared by burning the dried whole plant of either *ushtrapriya or ksudra duralabha.* It is known by the name of *lana/ lona* in Punjab and Sindh. After complete ignition of the plant parts, the ash is collected in a clean vessel and mixed with 8 times of water. Later, it is subjected to filtration for seven times through a clean cloth. The filtered liquid is heated intensely till all the water content got evaporated and the white colored residue obtained at the bottom of the vessel is collected and stored in a clean and dry container.[16]

Properties and actions[16]**:** ***Rasa:*** *Katu,* ***Guna****: teekshna, laghu, ruksha.* ***Virya:*** *usna,* ***Karma:*** *Pachana, vataharam, agnideeptikaram*, **Dose:** 3-12 ratti.

Therapeutic uses: In *Charaka Samhita, chikitsasthana grahani chikitsa,* he has mentioned the use of *kshara* from *duralabha, latakaranja, karanja* etc to increase the strength of *grahani*[4].

All these varieties are found in the ashes of Chenopodiaceous plants, a species of salt worts growing near the sea. Crude carbonate or sulphate of soda is an alkaline earth found in large quantities where white granite forms the sub-soil. It is generally found in the hot weather as an efflorescent sandy deposit covering large tracts of open country. It is scraped off the surface to about 3 inches deep and then boiled with a little quick lime and made into cubes for sale, in cart loads. Also obtained from kelp or barilla by incinerating sea-weeds from Dhobi's earth by adding quick lime to the earth and boiling repeatedly with water.

Constituents: It contains 25 percent of sodium carbonate. Sodium carbonate is obtained by lixiviation and crystallisation of barilla. Chemically it consists of carbonate of soda with certain impurities such as organic matter, sulphate of soda, potash etc.

Characters: It occurs in porous, granular masses of a greyish white color or as heavy hard pieces with a strong alkaline taste of soda.

Different opinions on method of preparation of *kshara*

According to *Sarngadhara Samhita*,[21] dried parts of plants which exude milky sap are burnt to ash. The ash thus obtained is dissolved in four times of water in mud pot and kept overnight. Next day morning the clear supernatant water is decanted out into a clean vessel and boiled till all the water evaporates, leaving a fine white powder at the bottom. This is known as *kshara.*

According to *Rasa Tarangini*,[22] the plants are dried and burnt into ash. The ash thus obtained is dissolved in four times of water and rubbed well with hands and the contents are kept undisturbed for 3 hours. Then it is filtered through a three layered cloth. This filtered liquid is boiled till whole water content gets evaporated. Finally, *kshara* is obtained in white powder form. Separate preparation method of *yava kshara, swarji kshara* etc are also detailed.

According to *Acharya Yadavji* in *Rasamrtam*[14], *Panchanga* or five parts of the plants are collected and dried, and burnt to get ash. The burning should be done till it gets completely burnt. The ash is dissolved in six times water in an earthern pot and kept for one night. Next morning the contents should be filtered 21 times and obtained liquid is heated, till total water content gets evaporated, then greyish white coloured *kṣhara* is obtained.

Table no.1 comparison of morphological features of Duralabh[23] and Dhanvayasha[24]

SPECIES	DURALABHA	DHANVAYASHA/USHTRAPRIYA
Botanical name	*Tragia involucrata* Linn	*Fagonia cretica* Linn.
Family	Euphorbiaceae	Zygophyllaceae
Distribution	Throughout India, ascending upto 750m.The plant grows well in somewhat sheltered shady places wherever the soil is good.	North-west India and Deccan.
Habit and general features	A perennial evergreen, climbing hispid herb with scattered stinging hairs, stems slender, elongate, twinning	A small spiny under shrub with stiff, more or less prostrate branches
Stem		Stem pieces 0.5 to 1.5 cm thick, of variable length, young-green, mature brown; spiny, two pairs of spines present at each node, spines sharp, slender, 1.5 to 2 cm in length; external surface of stem green, whitish brown when dry, striated; transversely smoothened surface showing a thin bark and prominent wood, bark peeling from stem; fracture short.
Root	Consists chiefly of a fairly long tap root and a few lateral roots starting from its upper or basal end. The outer surface of the root is light brown in color and more or less smooth. The bark is thin and can be easily separated from the woody part that comprises the major part of the root. The inner surface of the bark is very much smooth and greyish white in color.	Tap root externally brownish green, rough, with longitudinal striations, core yellowish green; fracture, fibrous .
Leaves	Simple, alternate petioled. Stipulate, 3.5 to10 cm long and 2 to 5 or more cm, broad, very variable in form, the shape varying from linear-oblong to broadly ovate- cordate or oblong-lanceolate, the outline entire or sometimes deeply palmately three lobed or partite, three to five nerved and often cordate at base, acute or acuminate at apex; edge or margin coarsely sharply serrate, texture rather thick and the surface closely covered with stinging hairs.	Small, subsessile, linear, oblong, leaflets entire, green or blackish brown, .5 to 1.5 cm in length 0.05 to 0.1 cm in width, without any prominent midrib region projected above the level of lamina.
Flower	Small monoeoious greenish shortly pedicellate and apetalous, in terminal or leaf-opposed as well as axillary, androgynous, hispid to rarely glabrous recemes 2 to 5 cm long, the pistillate few or only one and borne towards the base and the staminate flowers towards the top of the inflorescence. Bracts about 2.5mm, long, lanceolate, acute.	Small, pale rose or purple, pedicels slender, 6 to 12 mm long; sepals 3 to 4 mm long, ovate, aristate; petals twice as long as the sepals, spathulate, claw long; ovary hairy, style tapering.
Pistillate flowers	Calyx –gamosepalous, 6-10 lobed; very hispid with stinging hairs and imbricate in bud, stellately spread out in fruit.	
Pistil	tricarpellary, syncarpous	
Fruit	A three-lobed, whitish, somewhat hispid capsule about 6mm in diameter of three. two-valved cocci with crustaceous endocarp.	Pentagonous schizocarp, composed of five compressed, two valved cocci.
Seed	Globose smooth carunculate, with a broad tumid or swollen chalaza and fleshy albumin. Testa mottled und crustaceous, Embryo with flat broad cotyledons.	
Petiole	varying length - 3 to 15 cm or more long	
Stipule	prominent, about 6 mm. long, ovate, acute, somewhat auricled or cordate at base and falling off early.	

Discussion

Generally when any plant is dried and burnt, it gives white ash which is composed of components with water soluble and insoluble part. The ash possesses useful medicinal and pharmaceutical properties which is dissolved in specific volume of water discarding the water insoluble ash and concentrating the water soluble ash by heating it to obtain *'kshara'* and their uses are described in various Ayurveda classics. Ksharas contains the basic properties of original herbal drugs used. Though general method of *kshara* preparation is described in many texts, only some references mention *sarjika kshara* preparation in particular.

After completing the review, it is clear that there are mainly two plant sources for *sarjika kshara (*duralabha and dusparsha)and one mineral source called *sarjimrt* as per Rasa Jala nidhi. In addition to them, sea weeds are also a source as per *Raja Nighantu.*

A critical review on the raw drugs *Duralabha* (Tragia involucrata) and *dhanvayasa* (Fagonia cretica Linn.) was done based on the literature given in the *Ayurveda Rasasastra* classics and modern text books. *Duralabha* belongs to the family Euphorbiaceae and used for the preparation of *sarjika kshara* according to *Rasa Jala Nidhi*. It is mentioned that in the absence of natural *sarji mrut* (alkaline mud) the *sarjika kshara* can be artificially made from *Duralabha*

As per *Rasa Tarangini*, *ushtrapriya* i.e *kshudra duralabha* is mentioned for the preparation of *swarjika kshara*. *Kshudra duralabha* mentioned in *Rasa Tarangini* is a variety of *duralabha* .

The source drug is known by the name of *lana/ lona* in Punjab and Sindh. In the Ayurvedic Formulary of India and in the commentaries on *Dhanvantari Nighantu, Raja Nighantu* and *Dravyaguna vijnan texts*, the botanical name given for *duralabha* is Fagonia cretica Linn. In the 'Wealth of India' and 'Indian Medicinal plants' the synonyms of *duralabha* are given as both Tragia involucrata Linn. and Fagonia cretica Linn. In South India, generally *Tragia involucrata* Linn. is used in the name of *duralabha* i.e *kodithuva* in Malayalam.

As there is no standardization has been done in the preparation of sarjika kshara different samples are available in the market which are used for therapeutic purpose.Therefore a comparative physico chemical analysis which help in identifying the composition , is needed to be conducted to confirm the best source with highest therapeutic activity. Also standardization in preparation and physico chemical parameters of sarjika kshara from alkaline mud, plant species and available market sample is needed.

Conclusion

Standards for *sarjika kshara* is not stated in the API. Authentic information about the origin and mode of preparation of the market samples are not available. All these point towards non availability of properly prepared *sarjika kshara*.

After textual review, it is understood that there is a need to prepare *sarjika kshara* from both plants *Kshudra Duralabha* and *Dhanvayasa/Ustrapriya* and its analytical parameters should be compared to set its standard parameters for quality assessment.

References

1. Susrutha. susrutha samhitha of susrutha. In: Acharya vaidya jadvji trikamji, editor. reprint. varanasi: chaukambha sanskrit series; 2010. p. 45.
2. Indian system of medicine and homeopathy. the ayurveda formulary of india. In: 2nd editio. 2003. p. 163.
3. k.r.s M. astanga hridaya sutrasthana. In: sutra sthana 30/1-2. 7th ed. varanasi: chowkhamba krishnadas academy; 2010. p. 343.
4. sharma ram karan bhagawan dash. charaka samhitha. In: reprint ed. varanasi: chaukhambha orientalia; 2018. p. 49.
5. harihar prasad tripati. haritha samhitha. In varanasi: chaukambha krishnadas academy; p. 2009.
6. Bulusu S. bhavaprakasha of bhavamisra. In: 1st ed. varanasi: chaukhambha orientalia; 2010. p. 382.
7. sharma ram karan bhagawan dash. charaka samhitha. In: reprint ed. varanasi: chaukambha sanskrit series; 2018. p. 49.
8. Sharma h s. rasendramangala. In varanasi: chaukhambha orientalia; 2008. p. 34–5.
9. Misra S. ayurvediya rasasastra. In: reprint. varanasi: chaukhamba surbharti prakshan; 2011. p. 463.
10. sadanantha sharma. rasa tarangini. In banaras: motolal banarasidas publication; 2004. p. 337.
11. acharya daulataram rasasastri. rasahridaya tantra. In: 1st ed. chaukhambha orientalia; 1989. p. xiv.
12. Sharma mishra gulraj. ayurveda prakasha. In: 1st editio. varanasi: chaukhamba bharati academy; 1994. p. 503–4.
13. Ramarakshak P. ayurveda sarasamgraha. In: shri baidyanath ayurved bhavan .Ltd, editor. allahabad; 2002. p. 60.
14. dr. damodar joshi. Rasamritam of acharya yadavji trikamji. In varanasi: chaukhambha sanskrit series; 2007. p. 137–41.
15. bhudev mookerji. rasajala nidhi. In: english translation volIII. avni prakashan; 1984. p. 261.
16. pandit kasinath sastri. sri sadanantha sharma virachitha rasatarangini. In: reprint. motilal banarasidas; 2012. p. 313.
17. M nadkarni k. indian materia medica vol 2. reprint. popular prakashan private .ltd; 101 p.
18. rasa jala nidhi. In: 4th ed. varanasi: chukhamba publishers; 2004. p. 271.

19. Chandra. sathish. sri narhari pandits Raj nighantu. In: 1st editio. varanasi: chaukhamba orientalia; 2012. p. 1059–60.

20. Dwivedi V. bharatiya rasashastra. In: 2nd editio. datia: shree sharma ayurveda mandir; 1987. p. 372–3.

21. k.r.s M. sharngadhara samhita. In: REPRINT. varanasi: chaukhamba orientalia; 2012. p. 156.

22. Sharma S. rasatarangini by kasinath sashtri. In: reprint. banaras: motilal banarasidas; 2004. p. 337.

23. k.narayana iyer m . kolammaa. pharmacognosy of ayurvedic drugs. In trivandrum: pharmacognosy unit , ayurveda college; 1994. p. 104–8.

24. Govt.of India ministry of health and family welfare. the ayurvedic pharmacopeia of india. In: 1st editio. New delhi: the controler of publications civillines; 2006.

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