



Review of Ayurvedic Drugs Used In the Preparation of Kshara-Sutra

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ABSTRACT-Kshara Sutra refers to corrosive or caustic thread. Kshara is considered superior to all surgical and Para surgical measures, because they perform the work of incision, puncture, and scarification to relieve derangements of the Tridosha and uniformly affect the diseased part to which they are applied. Apamarga ksharasutra is used successfully in the management of fistula- in ano, It is quite common for a patient to seek treatment of this disease through surgical intervention because this is only alternative known to the modern medical practitioners. Many herbal remedies individually or in combination have been recommended in various medical treatment for the cure of different diseases. Materials used for preparation of kshara Sutra are Snuhi Ksheer, Apamarga Kshara, Haridra powder, Thread Linen Barbour No.20.

Kshara and Kshara-sutra will definitely play a key role in the development of Shalya Tantra branch. Kshara Sutra is a unique and an established procedure for difficult surgical diseases. Kshara Sutra ligation therapy in the management of Ano rectal disorders has proved boon for the humanity. It effectively Substitutes the modern surgical procedure as , it has Less economical, Pt. is ambulatory, Less discomfort , No damage of sphincter and soft tissues, No need of long duration hospitalization.

This review mainly focuses on the plants that are used in preparation of Ksharsutra so that more research work is carried out in the direction of standardization, therapeutic level determination of Ksharsutra plants.

Keyword-ksharsutra ,Snuhi, Apamarga, Haridra.

I. INTRODUCTION-

Ayurveda is the most ancient health care system and is practiced widely in India, Sri Lanka and other countries. ksharasutra is a Sanskrit phrase in which Kshara refers to anything that is corrosive

or caustic; while Sutra means a thread . Ayurveda is still at its peak in India and gaining a great popularity worldwide. The Ksharsutra was first mentioned by the "Father of Surgery" Sushruta in his text named SUSHRUT - SAMHITA for the treatment of Nadi Vrana, Bhagandara, arbuda etc. Although Brihatrayi- the chief three texts of Ayurveda mention the use of kshara sutra, there is no description of their preparation.

It was Chakrapani Dutta in late eleventh century who has mentioned in his book Chakradatta, the method of preparation with a clear-cut indication & its use in bhagandara and arsha for the first time. He explains the method that by smearing a sutra (thread) repeatedly in the latex of Snuhi and Haridra (turmeric) powder makes the kshara sutra. Later authors like Bhavamishra, Bhaisajyaratnavali etc. also mention the same method. But because of brevity of preparation and inadequate explanation of procedure of application, it lost its popularity among Ayurvedic surgeons .[1-2]

Properties of kshara

Kshara is considered superior to all surgical and Para surgical measures, because they perform the work of incision, puncture, and scarification to relieve derangements of the Tridosha and uniformly affect the diseased part to which they are applied. As per Sushruta, kshara possess the following qualities, Tridoshaghna , Saumyata , Dahana , Pachana, Daran , Katuka, Ushna, Tikshna , Vilayana , Shodhana , Ropana , Shoshana , Stambhana , Lekhana , Krimighna , It normalizes Aama, Kapha, visha, medodhatu . In addition to that Acharya Charak attributed two more properties -Laghu & Bhedana.

Kshara preparation as per Sushruta Samhita:[4]

In the process of kshara preparation; the following

precautions are inevitable-

a) Kaala- Sharad kala (in between Oct-Nov).

b) Place- nearby hilly area

After performing mangalacharana with healthy mushkaka plant along with its root in made into small parts and subjected for boiling till it is converted into total ash. After the separation of burnt lime-stones, the ash is collected in a utensil and care is taken that moisture is not contaminated with the ash. This is the prathamika kshara (basic kshara).

Preparation of Kshara -

Ash is prepared by burning the whole plant along with tila nala. The ash is mixed with 4 times water or Gomutra and filtered thoroughly. Boil the filtrate, evaporate the water and dry powder is obtained. Powder should be stored in air tight container.

Equipment Needed -

1. Kshara Sutra cabinet with ultraviolet light.
2. Autoclaved Petridish (for storage of raw material during application) .
3. Glass tubes (for packing of the prepared kshara sutra).

Types of Kshar Sutra-

In the textual reference of Chakradatta and Rasatarangini we get only indication of the thread made up of Snuhi, apamarga and Turmeric. Susruta describes about many kind of Kshara like Karaveera, Palasa, Kadali etc. in Susruta Samhita. So many studies have already carried out with variations in the Kshara and the latex. The most remarkable are Guggulu Ksharasutra, Udumbara Ksharasutra, Gomutra Ksharasutra, Papaya Ksharasutra, Ksharasutra prepared with Ficus carica latex etc . [5]

Method of Preparation-

The standard ksharasutra is prepared by repeated coatings of snuhiksheera (latex of Euphorbia Nerrifolia Linn), apamarga kshara (water extract of ashes of Achyranthus aspera Linn plant) and haridra powder over a surgical linen thread no. 20. This thread is spread throughout lengthwise in hangers. Each thread on the hanger is then smeared with snuhi latex with the help of gauze piece soaked in the latex. Kshara sutra cabinet has a source of hot air with regulated temperature to dry the thread and an Ultra Violet light that is used for sterilization. This wet hanger is transferred in kshara sutra cabinet for drying and sterilization. Same process is repeated next day.

Eleven such coatings with snuhi ksheera alone should be accomplished. The twelfth coating is done by first smearing the thread with ksheera and in wet condition thread is passed through the apamarga kshara. It is again transfer into the cabinet for drying and sterilization. This process is repeated till seven coatings of snuhiksheer and apamarga kshara is achieved. Final three coating are completed with snuhiksheera and fine powder of turmeric in the same fashion. Thus twenty-one coatings over the thread are completed [3]

Mode of Action-

Kshara Sutra is now a popular treatment modality in India for the management of fistula in ano. Many Clinical trials have been carried out in different institutes to evaluate the action of Kshara sutra in various disease conditions. The countries like Srilanka and Japan have also conducted many clinical trials and established the action of this thread. According to Ayurveda the action of Kshar sutra is thought to be due to its healing and cleansing effect in the local area where it is applied. It can be suggested that due to the anti microbial action and as a saton it allows the proper drainage of pus from the fistula that leads to a proper healing. On the other hand the cutting effect of thread incises the skin gradually without a surgical incision. Many studies confirm that it is more effective in the way of reducing hospital stay and less infection than the conventional saton therapy. Researchers suggest that it is having the action of Excision, Scrapping, Draining, Penetrating, Debridement, Sclerosing, Healing, Bactericidal and Bacteriostatic.

1) SNUHI -

Ayurvedic Classification In ayurveda classics, snuhi is mentioned under following gana.

- a) Sadsudhantree (ksheertraya), Virechan.
- b) Charak -Adhobhaghar,shaymadi
- c) sushruta- Kaphavataghna varga
- d) Botanical Name - Euphorbia nerifolia
- e) Family - Euphorbiaceae
- f) Sanskrit Name - Snuk, Gudha, sudha, Snuhi, Samantdugdha, Vajri
- g) Hindi Name - Thuhar, Sehunda, Seej
- h) English Name - Common milk hedge
- i) Distribution: It is found throughout India especially in South India.

Pharmacodynamic Properties of SNUHI-

- a) Rasa -Katu
- b) Guna- Laghu, Tikshna

- c) Veerya- Ushna
- d) Vipaka -Katu
- e) Karma -Bhedana, Tiksnavirecana

Chemical Composition:

It contains euphorbon, resin, gums, rubber, calcium maleate etc. The latex contains water soluble 69.4-93.3% and catotchone 2-2.6%. The latex is also believed to contain an enzyme which is proteolytic in nature.

Constituents: Resin, gum and triterpenes.

Action:

Doshik - Alleviates Kapha and Vata.

External - The juice of leaves applied externally to produce mild analgesic. The latex is irritant, rubrificient and powerful caustic when applied to a raw surface.

Internal Digestive System - The latex given orally act as a drastic purgative.

Respiratory system - Act as an expectorant.

Therapeutic uses:

Externally - Bandaging of leaves are useful in painful swelling swarasa is useful in otalgia. Latex is useful in toothache and skin disorder. The latex is used to remove warts and similar excrescence. Turmeric powder mixed with latex of snuhi is recommended to apply to piles masses. Thread steeped in above mentioned mixture is used for ligating pile masses and Fistula-in-ano.

Internally - The latex of snuhi used in chronic constipation, leprosy, anasarca, ascites etc. The snuhi is also useful in gout arthritis, syphilis, cough, dyspnoea etc.

Collection of Snuhi Ksheera-

Size of the Plant : 2-3 years. Old

Best time for collection: October – April.

Linear cuts are made on the stem and latex is collected in clean bowl. After sufficient amount is collected it is transferred to a glass bottle. Care to be taken so that the pieces of bark and dust will come along with latex. The Latex to be used immediately, avoid clotting .

2) APAMARGA-

Ayurvedic classification Apamarga is mentioned under

Sirovirechana & krimighna gana - Charak

Arkadi gana - Sushruta

Botanical Name - *Achyranthus aspera*

Family - Amaranthaceae

Sanskrit Name - Praytakpushapa, Shikhari, Kharmanjari, Mayuraka, Adhahshalya, Kinihi
Hindi- Chichini, Chirchita, Latjeera
English - Prickly chaff flower

Description:

It is annual perennial herb often with a woody base. Stems simple or branched from the base, often tinged with reddish, purple, ribbed viscid-pubescent. Leaves are ovate to elliptical or obovate rounded with a ceneate or rounded base, acute or acuminate or obtuse, crispy undulate, glabrous to pubescent. Spikes up to 75 cm long. Bracts and bracteoles sub equal, ovate spinescent. Pseudostaminoids or truncate or irregularly dentate at apex. The plant is very variable in habit, degree of hairiness, size and shape of leaves and length of spikes

Flowering and fruiting time: Winter to summer seasons.

Useful part: Whole plant (panchang), root, spikes and leaves.

Distribution: It is found in all parts of India.

Pharmacodynamics

a) Rasa - Katu, Tikta

b) Guna - Laghu, Ruksha, Tikshna

c) Doshik karma - Kapha vata shamaka, Kapha pitta, shamshodhaka

Chemical composition

The plant and seeds contain alkaline substance specially potash. It contains sodium, potassium, calcium, iron, magnese, aluminium, carbon, phosphorus etc. Prof. Basu and coworkers (B.H.U.) isolated a water soluble alkaloid "Achyronthene". R.N. chopara (1969) reported the work done on plant by different workers, he quoted that alcoholic extracts of seeds yield saponin 2%, sapogenin 1.1% and total extract of root contains oleanolic acid. Betaine is the basic constituent identified besides achyranthine alkaloid.

Action and properties :

It has anti-inflammatory, analgesic and curative properties. Ash of the apamarga is hygroscopic in nature and is a powerful caustic when applied to wound surface. When used internally, it act as an appetizer, digestive stimulant, cholagogue and mild laxative. It also improves the tone of cardiac muscle.

Therapeutic uses-

The plant possesses various medicinal properties and is useful as a pungent laxative, antidermatosis, wound healer, blood purifier, poison antidote, a cholagogue and also for other activities. Kshara being an appetizer is used in anorexia, indigestion, abdominal pain, warm infestations, piles and tympanitis. As an alkaline diuretic it is used in renal and vesicle calculus, cystitis and early stages of nephritis. Its antibacterial activity against few microorganisms was reported by Srivastava & Niyogi. Oxford cup method was adopted for the purpose and growth of the streptococcus haemolyticus, *S. aureus* and *Bacillus typhosus* was found retarded.

3) HARIDRA-

Ayurvedic classification In ayurvedic classics Haridra is mentioned under following gana Haridradi, Mustadi and Sleshma sanshaman - Sushrut

Kusthaghna, Lekhaniya, Kandughna, Vishaghna - Charaka

Botanical Name - *Curcuma longa*

Family - Scitamineaceae

Sanskrit Name - Haridra, Kanchani, Nisha, Gauri, Krimighana

Hindi Name - Haldi, Haridra

English Name - Turmeric .

Description-

Macroscopic - Rhizomes ovate, oblong or pyriform (round turmeric) or cylindrical, often short branched (long turmeric), former about half as broad as long, latter 2-5 cm long and about 1-1.8cm thick, externally yellowish to yellowish brown with root scars and annulations of leaf bases, fracture horny, fractured surface orange to reddish brown, central cylinder twice as broad as cortex, odour and taste characteristic.

Microscopic - Transverse section of rhizome shows epidermis with thick walled, cubical cells of various dimension, cortex characterised by the presence of mostly thin-walled rounded parenchyma cell scattered collateral vascular bundles, a few layers of cork developed under epidermis and scattered oleo-resin cells with brownish contents, cork generally composed of 4-6 layer of thin walled, brick shaped parenchyma, cells of ground tissue contain starch grain of 4-15µ in diameter. Oil cell with suberised walls containing either orange-yellow globules of volatile oil or amorphous resinous matter, vessels mainly spirally thickened a few reticular and annular.

Flowering and fruiting seasons :Farming seasons

Part used: Rhizome.

It is cultivated throughout the tropical and other regions in India.

Pharmacodynamic properties -

- Rasa - Tikta, Katu
- Guna - Ruksha, Laghu
- Veerya - Usna
- Vipaka - Katu
- Dosha- karma -
- Kapha-vata shamak,
- Pittarechak- shamak

Chemical composition-

Analysis of Indian turmeric gives following results – moisture 13%, protein 6.5%, water 3.5%, fiber 2.6%, carbohydrate 69.4%, Vit A 50 IU per gm. A ketone C₁₃H₂₂O and an alcohol C₉H₁₁OH, identified as polymethyl carbinol, have been obtained from the volatile distillate. Its rhizome contains a volatile oil, an active principle curcumin, a yellow coloured matter and turmeric oil of specific odor and taste.

The antioxidant property of curcuma powder is probably due to phenolic character curcumin. The choleric action of the essential oil is attributed to poly methyl carbinol. The dyestuff act as a cholagogue stimulating the contraction of gall bladder. (Indignous durg of India, IInd Ed.).

Action and Properties-

External -It causes vasodilation when applied on the mucous membrane. The paste of haridra is anti-inflammatory, analgesic, kusthaghana and vranashadhak -ropak. Fumes of haridra useful in hiccough and asthma.

Internal -It is carminative, cholagogue and wormicidal. It act as a blood purifier and helps in diuresis. The result obtained after fractional test meal on different individuals shows that the administration of curcuma oil is followed by a marked diminution of secretion of the acids in the stomach.

Therapeutic uses-

External -Paste is useful in traumatic inflammatory and painful swellings. It is very useful for the suppuration of unsuppurated wounds. Powder of haridra is very effective in wound healing.

Internal - It is used as stomachic & blood purifier. Fresh juice from the rhizome or decoction is used in the treatment of leprosy, snakebite, skin

disease, inflammation of joints and allergies. According to Vagbhata, haridra is the drug of choice of prameha.

The antibacterial properties of the oil were tested on *Staphylococcus aureus*, *S. albus* and *Bacillus typhosis*. Growth of the cultures of above mentioned bacteria's were inhibited in concentration up to 1:5000. The growth of cultures of *B. typhosis* was not inhibited in a concentration up to 1:1000. Anti-inflammatory activity of haridra was reported by several researchers. curcumin posses local and systemic anti-inflammatory properties. curcumin is useful in patients who are prone to vascular thrombosis and require anti arthritic therapy as it prevents platelate aggregation and also prevents prostaglandin synthesis so act as NSAID.

Extract of *Curcuma longa* exhibits an anti inflammatory activity in standard animal models. Curcumin and volatile oil are in part responsible for the action (Aman HP, Wahi MA, Pharmacology of *Curcuma longa*. *Planta Med.* 1991 Feb; 57(1): 1-7 The antibacterial activity of essential oil of *Curcuma longa* is quite marked. It is relatively better against *Salmonella paratyphi*, *Staphylococcus aurus*, *Klebsilla*.

II. CONCLUSION-

Kshara sutra is now a very popular and highly practiced treatment modality for the management of hemorrhoids, fistula in ano, chronic fissure with tags, anal warts, pilonidal sinus, chronic sinuses, rectal polyps, anal papilloma, neoplastic pedunculated growths etc. Several clinical trials have been carried in different prestigious institutes for evaluation and establishment of its action in India as well as in other countries like Srilanka, Japan etc.

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