



**REVIEW ON VARIOUS MEDICINAL PLANTS FOR THE PREPARATION OF
KSHARSUTRA: A PHARMACOLOGICAL APPRAISAL AND ITS ADVANTAGES OVER
TRADITIONAL ARK-SNUHI-APAMARGA KSHARSUTRA**

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ABSTRACT

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 and the public in general. In modern surgery the only form of treatment of anal disorders that affords any reliable prospect of cure is operation. The operative treatment of anal diseases is often far from simple and calls for caution and boldness based on wide experience of the disease in its various patterns and confident appreciation of anal anatomy. 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. In few cases, the intensity is so severe that the patients discontinue the therapy. To overcome these problems, several researches have been carried out. The researchers are based on searching for the drugs having better actions and acceptability than that of Snuhi latex and Apamarga kshara. These drugs should be having binding property on thread, easy availability in bulk, less irritant (sheeta veerya), having vranashodhak and vrana ropaka properties, having anti-septic and anti-inflammatory activities, and additional beneficial action. Thus, a study was attempted to review the published articles for the materials used in different Ksharsutra preparations.

KEYWORDS: Chitrak, Udumbar, Guggulu, Haridra, Traditional Kshara Sutra, Ark Snuhi Apamarga Kshar.

INTRODUCTION

Anorectal disorders are more common type of afflictions found in human beings. Of which, Bhagandara (Anal Fistula) is enumerated under eight "Maha rogas" i.e., difficult to cure.^[1] Ksharasutra for piles, fissure and fistula in Ano, is a popular treatment not only among Ayurvedic surgeons but also among modern surgeons, because of its safety, cost-effectiveness, success rate and simplicity. Ksharasutra therapy is unique in sense that it is one of the few Ayurvedic therapies which has been rigorously studied, evaluated and accepted by modern medicine. Ksharasutra is a unique cost effective parasurgical therapy effective in various ano-rectal diseases with a high rate of success and least chance of recurrence. Its main therapeutic value attributed to the components present in it.

Acharya Sushrut, the Father of Surgery stated about Ksharsutra for the first time in his text named 'Sushrut

Samhita' with its clear cut indication in Nadi Vrana, Bhagandar and Arbuda. Although Bhrihatrayi the chief three texts of Ayurved mention the use of Ksharsutra but there is no description of their preparation properly. It was Chakrapani Datta in 11th century in his book Chakradatta, first mentioned the method of preparation with a clear cut indication of its use in Bhagandar and Arsha.^[2] The Indian Council of Medical Research (ICMR) conducted randomized multi-centric clinical trials on Ksharasutra therapy and found that, the recurrence of anal fistula was only 4% as compared to the 11% in patients who had undergone conventional surgery. The Central Council for Research in Ayurveda and Siddha (CCRAS) and the Regional Research Laboratory, Jammu, have also conducted path breaking clinical research and contributed standardization of the procedure.

MECHANISM OF ACTION OF KSHAR SUTRA THERAPY^[3]

1. Local Drug Delivery System

Kshar Sutra remains in direct contact of the tract (fistula) and root (piles, fissure), therefore it acts directly on the diseased area.

2. Herbal Chemical Cauterisation

Kshar Sutra dissolves the tough fibrous tissue & chemically cures all the infection out of the tract and thereby allowing the fistulous tract to collapse and heal.

3. Facilitate the drainage of infection

Kshar Sutra keeps the whole tract open & facilitates the drainage of all the infection out of the body in the form of pus and thus prevents the further spread of fistula within the body.

4. Promotes Healing

Kshar Sutra due to its antibacterial property does not allow the bacteria to multiply in the presence & promotes healthy healing.

5. Cuts the Fistula Tract Naturally

Kshar Sutra performs cutting of the fistula tract because of the mechanical pressure of tightening of the thread at each seating.

These actions allow show cutting of the fistula tract & simultaneous healing of the wound from behind.

Advantages and Benefits of Kshar Sutra Therapy^[4]

- It is a simple, safe and sure treatment for fistula –in-ano (95% success rate).
- No damage to anal sphincter and chances of incontinence is practically Nil.
- It is an Ambulatory procedure, no hospitalization required. Performed in Minor O.T. conditions.
- Only local/topical anesthesia required. No antibiotic coverage is required.
- Cost effective – very Low cost treatment as compared to surgery.
- Fully Ayurvedic management, associated medicines for Internal and External use has many benefits.
- Recurrence is negligible (3-5%). Minimum scar formation at the wound site of Kshar Sutra.

PROPERTIES OF KSHARA^[5]

S.N.	Properties	Mode of Actions
1.	Tridoshaghna	because of different types of drugs it can pacify all the humours
2.	Saumyata	owing to their white color
3.	Lekhana	scraping property,
4.	Dahana	owing to its burning nature,
5.	Pachana	because of its digestive capability,
6.	Darana	since many drugs of agneya nature enters into their composition,
7.	Katuka	because of its pungent taste,
8.	Ushna	because of its heat producing nature
9.	Tikshna	because of its irritant nature,
10.	Vilayana	because of its liquefaction property,
11.	Shodhana	because of its cleansing property,
12.	Shoshana	Absorption
13.	Ropana	improves granulation (healing),
14.	Krimighna	because of its antimicrobial action,
15.	Stambhana	arresting or stopping nature

Division of Plants on the basis of their Dosha Shamakata^[6]

- 1) Vataghna- Kadali
- 2) Pittaghna- Kutaja, Aragvadha, Krutavedhan,
- 3) Kaphaghna-Palash, Karanja, Tilvak, Vaasa, Agnimantha, Apamarga, Snuhi, Putika, Ashwakarna, Nimba, Chitrak
- 4) Tridoshaghna-Patala, Sariva, Gunja.

AYURVEDIC DRUGS USED IN THE PREPARATION OF KSHAR-SUTRA

An exhaustive list of kshara source plants is described in the Sushruta; mostly the kshara of apamarga (Achyranthes aspera) is used in kshara sutra preparation. Since the Prakriti (constitution) of the patients, dosha involvement in the clinical conditions would be different, accordingly different kshara source

plants should suit individual patients because different source plants should exert different pharmacological behavior. Further, availability and cost of plants are place and season specific and rationalization can happen through exploring different plant sources for kshara. It is, thus logical to explore the possibility and feasibility of using other kshara in preparation of ksharasutra.

1. Snuhi ksharasutra^[7]

- Snuhi is mentioned under following gana-
Charak - Sadshodhan tree (ksheertraya), Virechan.
Sushruta - Adhobhagar, shaymadi.
- **Part used:** Root stem leaves, Ksheer (Latex).
- **Pharmacodynamics Properties**
- Rasa- Katu, Guna -Laghu, Tikshna, Veerya- Ushna, Vipaka- Katu, Karma -Bhedana, Tikshna virechana
- **Action:** Doshik - Alleviates Kapha and Vata.

- **Constituents:** Resin, gum and triterpenes.
- **Chemical Composition:** It contains euphorbon, resin, gums, rubber, calcium maleate etc.

The latex is also believed to contain an enzyme which is proteolytic in nature.

External use - The juice of leaves applied externally to produce mild analgesic.

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.

Collection of Latex

The latex is collected in the end of sishir by pearcing the stem of snuhi with the help of a sharp knife on a 2-3 year old plant which is full of thorn.

2. Apamarga Ksharsutra^[7]

In Ayurvedic classification Apamarg is mentioned under-

Charak - Sirovirechana & krimighna gana.
Sushruta- Arkadi gana.

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

Pharmacodynamics

Rasa - Katu, Tikta Guna - Laghu, Ruksha, Tikshna, Veerya – Katu, Doshik Karma - Kapha Vata Shamaka, Kapha Pitta Shamshodhaka.

Chemical composition

- The plant and seeds contain alkaline substance specially potash.
- Alcoholic extracts of seeds yield saponin 2%, sapogenin 1.1%
- 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.

Therapeutic uses

Apamarg kshar mixed with tila taila (sesamum oil) and used externally over wounds, ulcers and warts of penis and also other parts of the body. It is also used in otalgia.

Kshar being appetizer is used in anorexia, indigestion, abdominal pain, warm infestations, piles and tympanitis.

3. Haridra Ksharsutra^[7]

In ayurvedic classics Haridra is mentioned under following gana-

- Haridradi, Mustadi and Sleshma sanshaman-**Sushrut.**
- Kusthaghna, Lekhaniya, Kandughna, Vishaghna-**Charak.**

Part used: Rhizome.

Pharmacodynamic properties

Rasa - Tikta, Katu, Guna - Ruksha, Laghu, Veerya – Usna, Vipaka - Katu

- **Dosha- karma** - Kapha-vata shamak, Pittarechakshamak
- **Chemical composition-** Its rhizome contains a volatile oil, an active principle curcumin, a yellow coloured matter and turmeric oil of specific odor and taste.

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 usefull is hiccough and asthama.

• Therapeutic uses

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

SOME OTHER DIFFERENT TYPES OF KSHARASUTRA

1. Udumbara Ksharasutra^[8]

- Udumbar kshar sutra is having Vranashodhak and Vranropak action. In this thread, latex of ficus glomerulata was used. It is a sheeta veerya drug and is used in dushta vrana.

Advantages

- a. Preparation is easy and requires less time.
- b. Less irritant, so does not produce much pain.
- c. Smooth cutting.
- d. Good wound healing.
- e. Good tolerance by the patients.

Disadvantages

- a. UCT (Unit cutting time) was less in comparison to standard thread.
- b. Sticking ability of latex on thread was less.
- c. Knotting after application was difficult.

2. Papaya Kshar Sutra^[9]

- Papaya is a good cleansing and healing drug.
- Ingredients – papaya fruit pulp, papain powder (obtained by drying unripe fruit juice- active principle).

- **Advantages**

- Papaya Sutra is Vranropak,
- Papain powder (obtained by drying unripe fruit juice) used in the thread and contains strong proteolytic enzymes which leads to debridement of necrosed tissue very early after application.
- It facilitates early wound healing. It can be easily prepared in short time. Patient tolerance was also very good after application.
- Disadvantages: UCT time is very less.

3. Guggulu kshara sutra^[10]

- Guggulu has been described as Putihara, Vedanasthapan, Vranshodhak and Vranropak in classic. Guggulu has analgesic, debridement and healing properties. It is also having good binding action on thread and its anti-inflammatory activities have been proved by researches. It is easily available and solution is prepared very easily in alcohol or water.

Advantages

- Easy preparation due to bulk availability of guggulu.
- Excellent tolerance by the patient.
- Pain and anxiety are very less during and after application due to its non-bleeding nature and analgesic action.
- Pain, discharges, indurations are reduced in early sittings in comparison to other threads.
- Good wound healing and cosmetically acceptable scar.

Disadvantages

Due to its soapy nature, it loosens after application.

4. Ghrita kumari (Aloe Vera) ksharasutra:^[11]

- It also has Shoth-har and Vran ropak properties
- In this thread ghritkumari pulp was used in place of snuhi latex.
- Researches suggest that it possess local anaesthetic property (used in burns). Its pulp possesses binding action.

Advantages

- Easy availability & preservation.
- Good wound healing.
- Good tolerance and no allergic reactions, etc.

Disadvantages

- Sticking was not uniform.
- The thread was beaded so pain was noticed during application.

5. Yava-kshara coated sutra:^[11]

- Yavakshara is well known for its lekhan action. It is also Shothhar and Shitviryatmak in nature.
- According to researches, it comprises fibrolytic, hygroscopic, and anti-inflammatory actions.

Advantages

- Pain and agony were reduced very much during & after application.
- UCT was less (6.48 days/ cm) in comparison to the standard thread (9.01 days/ cm). Also the thread was tolerated very well.

6. Palash Kshar Sutra:^[12]

- It is equally good as Standard Kshar Sutra. It is observed that in the treated group of Palash Ksharsutra there was a marked reduction in pain, burning sensation, inflammation and local reaction.
- The only drawback was that its unit cutting time was more as compare to ApamargaKsharsutra.

7. Nimba Kshar Sutra

- In Dhanvantari Nighantu it is emphasized that Nimba has a property which does help in suppuration of immature shoth and drains the suppurated Vrana which leads to cleaning of cavity subsequently subsides the pain other than this it has Kandughna, Krumighna and Dahashmak properties.
- Rasa- Tikta, Vipaka- Katu, Gunas- Laghu, Veerya-Sheeta, Doshagnata- Kaphapittaghna.

8. Kadali Kshara Sutra^[13]

Kadali Kshara Sutra can be considered as a better alternative in place of other Kshara Sutra because it has more acceptability, less irritant, easily available, causes less burning sensation and encourage healing by new granulation tissue formation but its unit cutting time is more as compared to Apamarga Kshar Sutra.

9. Aragwadhadi Kshar Sutra^[13]

Aragwadhadi Ksharsutra for Bhagandar has been described by many ancient authours. Sushruta has also mentioned Aragwadhadi Varti in the Bhagandar Chikitsa. burning pain and irritation during the primary application and successive change of Sutra is quite less.

CONCLUSION

The above collection reveals that each plant has its own advantage in terms of geographical occurrence, feasibility of pharmaceutical processing, drug-patient interaction and user suitability. Use of various medicinal herbs involve in preparation of Kshara sutra helps the physicians and manufacturers to develop quality product for commercial use and easy availability. Cultivation of medicinal plant involved in the preparation of the material, large scale of production of the Kshara sutra and establishing special Kshara sutra clinic is the need of hour.

REFERENCES

1. Chakrapni, Charaka Samhita (Chakrapanidatta commentary). Sharma RK, Bhagavandash, editors. 1st ed. Varanasi: Chowkamba Sanskrit Series, 2010; 74.
2. Agnivesha, Charaka Samhita (Chakrapanidatta commentary), Vol.3. Sharma RK, Bhagavandash,

- editors. 1st ed. Varanasi: Chowkamba Sanskrit Series; Chikitsa Sthana, 1984; 2: 72.
3. Ayush Kumar Garg, Amit Singh, Harish Vishnoi, Gulab Chand Meena, Chandan Singh, Manoj Adlakha. Swine Flu- The Changing Scenario and Preparedness with Formulation of “Win Flu Air Freshener Gel. *International Journal of Ayurveda and Pharma Research*, 2017; 5(11): 14-20.
 4. Charaka samhita, Part –I, by pt. Kashinatha Shastri, Chaukhambha Sanskrit Sansthan Varanasi, sixth edition, Sutra sthana, ch.4 pg.no.93.
 5. Harish Vishnoi Et Al: A Review On Anti-Ulcer Activity Of Few Herbal Plants. *International Ayurvedic Medical Journal* {online} 2017 {cited May, 2017} Available from: http://www.iamj.in/posts/images/upload/1642_1646.pdf.
 6. Sushruta Samhita of Maharshi-Sushruta edited with Ayurved Tattva Sandipika by Kaviraj Abikadutta Shastri, Part I Chaukhamba Sanskrit sansthan, 14 edition: Sutra sthan chapter no, 2003; 38: 186-189.
 7. Ayush Kumar Garg, Chandan Singh, Manoj Kumar Adlakha. Traditional Relation between Ayurveda and Modern Medicine on the molecular basis. *Indian journal of Agriculture and Allied Sciences*, 2017; 3(4): 133-137. Available from: <http://www.ijaas.org.in>.
 8. Agnivesha, Charaka Samhita (Chakrapanidatta commentary), Vol.3. Sharma RK, Bhagavandash, editors. 1st ed.: Chowkamba Sanskrit Series; 1984. Siddhi sthana 1, p. 479.
 9. Ayush Kumargarg Et Al: Role of Medhya Rasayan in Geriatric Health Care W.S.R. To Mental Health. *International Ayurvedic Medical Journal* {online} 2017 {cited February, 2017} Available from: http://www.iamj.in/posts/images/upload/330_337.pdf.
 10. Harish Vishnoi et al.2018, Effect of Ayurvedic Herbs In The Management of Lower Limb Complications Related To Diabetes Neuropathy- A Case Study. *Int J Recent Sci Res.*, 9(2): 24579-24581. DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0902.1687>.
 11. Manju Rani, Riju Agarwal, K K Sijjoria. Preparation of different types of kshara sutra. *Int. J. Res. Ayurveda Pharm*, Mar - Apr 2016; 7(Suppl 2): 176-180. <http://dx.doi.org/10.7897/2277-4343.07281>.
 12. Ayush kumar garg, Amit Singh, Harish Vishnoi, Chandan Singh, Manoj Kumar Adlakha. Traditional Dietary Pattern of Indian Food and its Scientific Basis: An Overview. *AYUSHDHARA*, 2016; 4(1): 983-985.
 13. Amit Singh, Ayush Kr. Garg, Chandan Singh and Devendra Chahar, Standardization and Qualitative analysis of Ayurvedic/Herbal Drugs, *World Journal of Pharmaceutical Research*, 2018; 7(2): 496-521.