

DRUG REVIEW ARTICLE – CHRONICLES OF KSHARAGADA

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KSHARAGADA -DRUG REVIEW

Ksharagada is one among *vishaghnayoga* (antidote) explained in classics by *AcharyaCharaka*, *Sushruta*, *Vagbhata* and *Bhel* in *visha* contexts which has different ingredients and methods of preparations. Two different methods of preparations are mentioned below:

According to *Acharya Charaka* following is the method/procedure followed for the preparation of *Ksharagada*:

- Collect *twak* of *taruna palasha*,
- Dry it well in open sunlight,
- After it is complete dry, burn it and collect the ash (*bhasm*),
- The produced ash is then mixed with 1:4 or 1:6 parts of water and to be soaked well, followed by filtration,
- This *ksharajala* (mixture of ash and water) is heated over moderate flame till it reduce to half of its volume,

- And then fine powder of all other seventeen (17) ingredients is taken in equal proportions and added to *kharajala*,
- This mixture is continuously heated/cooked with stirring till it attains *avaleha* consistency and that is understood once it starts sticking to the stirrer,

Then this *lehya* is rolled into pills and is dried in room temperature, and according to *Acharya Sushruta* the same *Ksharagada* is prepared by following method/procedure

- Collect twak of taruna palasha,
- Dry it well in open sunlight,
- After it is complete dry, burn it and collect the ash (bhasma),
- The prepared ash is to be mixed with 4 or 6 parts of water and stirred well,
- Soak it for overnight,
- Then the next day filter it using muslin cloth for 21 times and *ksharajala* is obtained.
- The obtained *ksharajala* should be heated on moderate flame till water content gets evaporated and is called as *kshara*.
- This *kshara* is taken and diluted in 1:4 or 1:6 parts of water and heated on moderate flame, till it reduces to half of its volume.
- Then fine powders of all the ingredients in equal proportions are to be added in $\frac{1}{4}$ quantity of *kshara*.
- Continuous stirring should be done till it attains *avaleha* form and formerly prepare pills which has to be dried in shade.

The formulation which has been explained in different *samhitas* have relatively similar indication and has mainly advised in *gulma* and *visha*, in spite of its different method of preparation.

The common indication quoted by different *Acharyas* is mainly *gulma* and *visha* along with some other diseases like *shotha*, *gulma*, *twak dosha*, *arsha*, *bhagandara*, *pleeha*, *apasmara*, *krimi*, *bhoota*, *swarabheda*, *pandu*, *mandagni*, *kasa*, *swasa* and *unmada*.

Indication of *Ksharagada* by *Acharya Sushruta* and *Acharya Vrudha Vagbhata* is in *Ashmari*, *arsha*, *vatagulma*, *kasa*, *shula*, *udara*, *ajirna*, *grahani*, *bhaktadwasha*, *darna shopha*, *shwasa* and *vishaghna*. Whereas *Acharya Bhel* has explained it in *vatagulma*, *pleeha*, *arsha*, *shula*, *krimi*, *grahani*, *visha*, *sarpa*, *mushaka damsha*, *granthi*, *vatashleshma*, *samuthanam sannipatatmak*, *prasaahya gulma*, *vandya*, *gara*, *apasmara*.

Table 01. *Ksharagada* references, Ingredients and Indication shown below

S.No	Reference	Ingredients	Indication
1	<i>Charaka.Chikitsa sthana. 23/101-104</i>	<i>Palash ksharajala, gairika, haridra, daruharidra,surasamanjiri, yashtimadhu,laksha,saidhava, jatamamsi, harenu, hingu, dwiariva, kushta, trikatu, bahlika</i>	<i>Sarva visha shotha, gulma, twak dosha, arsha, bhagandara, pleeha, shotha, apasmara, krimi, bhoota, swarabheda, pandu,mandagni, kasa, swasa, unmada</i>
2	<i>Sushruta.klpa sthana.6/ 1- 7 Sushruta.klpa</i>	<i>Dhava, ashwakarna, shirisha, tinisha, palasha, pichumarda, patali, paribhadra, udumbara, karahat,</i>	<i>Ashmari, arsha, vatagulma, kasa, shula,udara,ajirna,grahani, bhaktadwasha, darna,shopha,</i>
3	<i>Bhelsamhita Chikitsa sthana. 5/40</i>	<i>Mahaoshada, devadaru, vasa, katurohini, chitrak,pippalimula, pippali, hastipippali, kushta, sarpagandha, pancha lavana, dwikshara, trivrutta, danti, dravanti, chopakunchika,lavana 1/2 pal, churna 1 pal, vasa, taila, ghrta 1 prastha</i>	<i>vatagulma, pliha,arsha, shula,vardhma, aavarta kundalam, krimi, grahani,visha, sarpa,mushaka damsha,granthi, vatashleshma,= samuthanam sannipatatmak, prasaahya,gulma, vandya,gara, apasmara</i>
4	<i>Ashtanga sangraha Chikitsa sthana 16/16</i>	Same as <i>bhela</i>	<i>Gulma</i>
5	<i>Ashtanga Sangraha uttara sthana 47/38</i>	Same as <i>sushruta</i>	<i>Sarva, Visha Nasak</i>

Acharya Charaka has explained *Ksharaagada* in the context of *Sthavara Visha Chikitsa* specified in third *vegavastha*. In *Acharya Charaka* 's formulation the details of individual raw drugs are given in *table no1*

Table no 2–Botanical name ,*guna*and *karma* of individual drugs of *Ksharagada*

S.No	Ingredients	Latin name	Rasa	Guna	Veerya	Vipaka	Karma	Indication
1	Palasha	<i>Butea Monosperma (lam) Taub</i>	Katu	Laghu, Ruksha	Ushna	Katu	Grahi	Arsha , Krimi, Kushta, Gulma, Udara
2	Shodhita Gairika	<i>Ferric Oxide</i>		Pachaka	Ushna		Deepana, Rasayana	Gara, Visha, Kasa, Swasa.
3	Haridra	<i>Curucuma. Longa Linn</i>	Tikta Katu	Ruksha Laghu	Ushna	Katu	Uttejaka, Sugandhi, Raktadoshahara, Tvakadoshahara, Shothahara, Deepana, Grahi, Vishagna	Charmaroga, Prameha, Shotha, Pandu, Vrana.
4	Daruharidra	<i>Berberis Aristata DC</i>	Tikta Kashaya	Laghu Ruksha	Ushna	Katu	Deepana, Pachana, Grahi, Pittarechaka, Jwarahara, Swedala, Shlesmaghna, Rasayana	Vishamajwara, Kupachana, Phiranga, Gandamala, Apachi, Vrana
5	Surasa Manjiri (Tulasi)	<i>Occimum, Sanctum Linn</i>	Madhura	Snigdha	Sheeta		Deepana, Hrudya	Mutrakruccha
6	Yashtimadhu	<i>Glycyrrhiza. Glabra, Linn</i>	Madhura	Guru, Snigdha	Sheeta	Madhura	Chakshushya, Keshya, S	Vrana, Shotha, Visha, Chardi, Trushna, Glani.
7	Laksha	<i>Lacifer, Lacca</i>	Tikta, Kashaya, Madhura	Laghu, Snigdha	Sheeta	Madhura	Pachana, Varnya	
8	Saidhava	<i>Sodium Chloride</i>	Lavana	Guru, snigdha, Tishna	Ushna	Katu	Shothghna, Vedanasthapana, Rochak	Vatavikara, aruchi, agnimandya, visha, arbuda, Vrukkashotha
9	Jatamansi	<i>Nardostachys jatamansi DC</i>	Tikta, Kashaya, Madhura	Laghu Snigdha	Sheeta	Katu	Medhya Balaprada	Daha, Visarpa, Kushta
10	Harenu (Nirgundi)	<i>VitexNegundo Linn</i>	Katu, Tikta	Laghu Ruksha	Ushna	Katu	Sihambhana Shothghna Plihavruddhi Yakruta Roga	Deepana, Vishaghna
11	Hingu	<i>Ferula Narthex Boiss</i>	Katu	Laghu Snigdha Tishna	Ushna	Katu	Pachana Ruchya	Shula, Gulma, Murcha, Apsmara, Udara
12	Krishna sariva	<i>Ichnocarpus Frutescens R. Br.</i>	Madhura, Tikta	Guru, snigdha	Sheeta	Madhura	Tridosahara Dahaprashamana, Shothahara, Deepana, Pachana, Anulomana	Shwasa, kasa, vishanashana, jwara, atisara

13	<i>Shweta sariva</i>	<i>Hemidesmus Indicus R Br.</i>	<i>Madhura, Tikta</i>	<i>Guru, snigdha</i>	<i>Sheeta</i>	<i>Madhura</i>	<i>Tridosahara Dahaprashamana, Shothahara, Deepana, Pachana, Anulomana</i>	<i>Shwasa, kasa, vishanashana, jwara, atisara</i>
14	<i>Kushta</i>	<i>Saussurea, Lappa, C.B, Clarke</i>	<i>Tikta, Katu, Madhura</i>	<i>Laghu, ruksha, tikshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kaphavata Shaman</i>	<i>Visarpa, kasa, kushta</i>
15	<i>Shunti</i>	<i>Zingiber, Officinale, Rosc.</i>	<i>Katu</i>	<i>Laghu, snigdha</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Kapha-Vata Shamana</i>	<i>Deepana, pachana, rochana, vatanulomana, shulaprashamana</i>
16	<i>Marich</i>	<i>Piper, Nigrum, Linn</i>	<i>Katu</i>	<i>Laghu, tikshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Vata & Kapha Shaman</i>	<i>Shwasa, shula, krimi</i>
17	<i>Pippali</i>	<i>Piper, Longum, Linn</i>	<i>Katu</i>	<i>Laghu, snigdha, tikshna</i>	<i>Anushna</i>	<i>Madhura</i>	<i>Kapha & Vata Shaman</i>	<i>Pleeha roga, shula, aama, shwasa, kasa, udara, kushta</i>
18	<i>Bahlika</i>	<i>Ferula, Foetida, Regel</i>	<i>Katu</i>	<i>Laghu, Snigdha, Trishna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Pachana, Ruchya</i>	<i>Shula, Gulma, Murcha, Apsmara, Udara</i>

Research updates on pharmacological properties of individual drugs -

- *Palasha* bark

Palasha is said to have *katu, tikta, kashaya rasa, laghu, ruksha guna, ushna, veeryaand katu vipaka*. It is indicated in disease conditions such as *grahi, trishna, arsha, krimi, kushta, gulma, udara roga*, because of its *karma as vatakaphagna, deepaniya, and daha shamana*.

Anuradha Sehrawat et al proposes *Butea monosperma* concentrate is a powerful chemo-preventive operator and represses 2-AAF-prompted hepatic carcinogenesis by postponing tumour arrangement and diminishing the recurrence of tumours and oxidative harm in wistar rodents, which proves its chemoprotectivity activity.

M. A. Kamble et al 2015 has described *Butea monosperma* for its anti-cancerous action in the invitro on human breast cancer cell line in its concentrate extract.

Ashwini Somayaji et al 2016 has elucidated *Butea monosperma* has properties like astringent, aphrodisiac, anthelmintic, antibacterial and used in asthma. It has been utilized for the treatment of various ailments. Different invitro and invivo studies have shown its anti-diabetic, anti-malignant growth, anti-microbial, anti-viral, anti-oxidant, anti-convulsion activity.

Salar R K et al. 2011 have proved the free radical scavenging activity of *palasha*. In Shaista et al 2012 *palasha* extract shows a strong contraceptive and antidote against snake venom.

Muralidhar A. et al reported the hepatoprotective, anti-inflammatory in ethanolic extract of *palash* bark in wistar rats.

Tiwari P. et al 2019 have quoted antifungal, antiulcer activity of *palasha* bark.

Somayaji et al 2016 reported wound healing, anti-diarrhoeal, anti-microbial, antifungal, and antiulcer.

- *Daruharidra*

Daruharidra has *tikta, kashaya rasa laghu ruksha guna*, *ushna veerya* and *katu vipaka* which aids in *agni deepana and swedala*. It also works as *sleshmaghna*, *pittakapha shamaka*, *pittarechaka*, indicated in *grahi jwara vishmajwara*, *kupachana*, *phiranga*, *gandamala apachi*, *vraha*, *kustha*, *visha*, additionally promotes *rasayana*.

Soumya et al. 2009 found anticancer activity of *Berberis Aristata DC* methanolic extract on colon cancer cell lines.

Singh V et al. 2013 states its anti-inflammatory action. CCRS joint project with advanced centre for treatment, Research, and Education of Cancer (ACTREC) reported in vitro anticancer activity of *Berberis Aristata*.

In script of Indian medical plants *Berberine* has antibacterial and anti-inflammatory action.

Mazumder PM reported anti-microbial, anti-depressant, and hepatoprotective activity of *Berberis Aristata*.

Srivastava S et al. 2015 identified properties alike anti-inflammatory, central nervous system protective, anti-microbial and hepatoprotective.

▪ *Tulasi*

In *Bhavaprakash Nighantu* *tulasi* is disclosed to have *madhura, katu tikta rasa sheeta veerya* which demonstrates the action of *deepana, and supportive in hrudya* conditions. *Adhvaryu* et al. 2008 have validated anti-tumour and chemoprotective activity of *ocimum sanctum* and *curcuma longa* in vivo by Dalton lymphoma ascites bearing mice and in vitro assay on DLA- cell line.

Mrutyunjay M Mirje et al 2014 documented its anti-inflammatory activity. Joseph B et al. 2013 reported anti- cancerous activity of *tulasi*.

Singh N et al. 2012 quoted anti-radiation activity, antioxidant activity of *tulasi*.

The seeds of *tulasi* proved to be helpful in psychological disorders, including fear-psychosis and obsessions. Additionally oil extracted from these seeds revealed, the antiasthmatic action and effectively protected the guinea-pigs from histamine and dyspnoea state. They also showed anti inflammatory activity against carrageenan-, serotonin-, histamine- and PGE-induced inflammation and inhibited hind paw oedema in rats. (IMP)

- *Yashtimadhu*

Yashtimadhu has *madhura kashaya rasa, guru snigdha guna sheeta virya* and *madhura vipaka*, which is *vatapittahara* and is beneficial as *shukrala* and *balya, chakshushya, keshya* and *swarya*, indicated in *vrana shotha visha chardi trushna* and *glani* conditions.

According to Indian Herbal Pharmacopoeia the properties of *Yashtimadhu* are *madhura rasa sheeta veerya madhura vipaka* and it acts as anti-inflammatory, antiulcer agent, antiallergic, antidiabetic, antistress, antidepressive, antiulcerous conditions like mouth ulcer, inflamed stomach, tuberculosis, respiratory infections, bronchitis, dry cough, catarrh, genitourinary diseases, furthermore in abdominal pain, gastric, duodenal ulcers, and mild laxative spasmolytic.

Dhanabalan B et al. 2015 has specified gastro protective action of *Yashtimadhu*.

Aslam B et al 2015 G has proved *glabra* root powder to be gastro protective. As considerably improved the TAC and CAT action when compared to synthetic antiulcer drug though it shows remarked decline in TOS and MDA levels which specifies its antioxidant property. Generally the study shown that extract of *G. glabra* at 250, 500, and 750 mg/kg acquires gastric protection action.

Roshan A et al. 2012 and Harwansh R.K. et al 2011 quoted antioxidant, antifungal, anti-inflammatory, anti-carcinogenic, hepatoprotective, anticancerous activity of *glycyrrhiza glabra* linn.

- *Haridra*

Haridra possess *tikta katu rasa, ruksha laghu guna , ushna veerya, katu vipaka* which is best in *kushta visha* conditions, it is *sugandhi* and *uttejaka dravya* does *deepana , grahi , raktashodhana* which is also indicated in *charmaroga , prameha , shotha pandu , vrana* .

M. Akram et al 2010 and Labban L 2014 documented effects like antimicrobial, hepatoprotective, anti-inflammatory, anti-carcinogenic effects, antioxidant and free-radical scavenging, gastrointestinal properties.

Yan Li et al Hepato has mentioned protective and chemo protective action of curcuma. Savaringal JP et al. 2018 revealed anti-inflammatory of curcuma and IMP supports anti-inflammatory, hepatoprotective, anti-tumour, anti-oxidant, of curcuma that protects DNA damage.

- *Shweta Sariva*

Shweta Sariva that holds *madhura tikta rasa , guru snigdha guna , sheeta virya madhura vipaka* , which is *tridoshamaka* , works as *deepana , pachana, anulomana ruchikara dahaprashmana* and also has great role in *shwasa , kasa , vishnashana , jwara, atisara kushta visha , shotha* condition.

B Prathib et al 2017 quoted antitumor activity, anti-inflammatory action of *Shweta Sariva (Ichnocarpus frutescens)*

- *Krishna Sariva*

Krishna sariva acquires madhura, tikta rasa guru, snigdha guna sheeta virya tridosahara dahaprashamana, shothahara, deepana, pachana, anulomana karma and indicated in shwasa, kasa, vishanashana, jwara, atisara

Panchal G. A. At al 2009 quoted antioxidant, hepatoprotective, anti-ulcer, antimicrobial, anticancer, anti-inflammatory of *Krishna Sariva (Hemidesmus indicus)*

- *Jatamansi*

Jatamansiperceiving tikta, kashaya, madhura rasa, sheeta veerya, katu vipaka whis is tridosha shamaka enables action of balaprada, daha, twachya, indicated in medya , visha, visarpa , kushta conditions.

Ayurvedic Pharmacopoeia of India mentions dry roots useful in skin diseases, erysipelas, disturbed mental state and insomnia, Used for the treatment of epilepsy, hysteria, convulsive affections (IMP). Choudhary S at al 2015 and pandey M.M at al 20013 quoted antioxidant, anticancerous effect of *jatamamsi*. Dhuna K at al 2013 reported Cytoprotective action of *jatamamsi*.

- *Kushta*

Kushta has tikta , katu, madhura rasa, ushna veerya, katu vipaka, kaphavata shaman , indicated in visarpa , kasa , kushta , hikka .

Zahara K et al 2014 has mentioned hepatoprotective, anti-inflammatory activity, gastro-protective, anticancer/antitumoreffect of *kushta*.

- *Hinguhaskatu* rasa ,*laghu snigdha tikshna guna* ,*ushna veerya, katu vipaka* ,*pachana ruchya* as *karma*, and indicated in *shula,gulmamurcha,apsmara,udara* ,also acquires antimicrobial activity on gram-positive and gram negative bacteria.
- *Shunti*

Shunti has *katu rasa, ushna veerya, madhura vipaka* pacifies *vatakapha* , *deepana* , *pachana rochana* , *vatanulomana* , *shulaprashmana* , *kushta hara* .

Habib SHM et al. 2008 reported anticancer and antiinflammatory activity of ginger extract on ethionine induced hepatoma rats.
- *Maricha*

Maricha has *katu rasa, ushna veerya, katu vipaka* acts as *kaphavatahara* indicated in *krimi,kasa,shula ,shwasa* .

Tasleem F et al reported antiinflammatory activity of piper nigrum L ethanolic extract by carrageenan-induced paw inflammation in rats. F. Amin et al 2010 stated in vitro anticancer and immunomodulatory action of *Piper Nigrum*
- *Nirgundi*

Nirgundi having *katu* , *tikta* , *laghu ruksha guna sheeta* , *katu vipaka*, shows properties of *deepana, pachana medhya ,stambhana* and *shothghna*. Indicated in *pilvrudhi* , *yakrat roga* , *vishgna ,vatahara kaphahara* .

Saklani S et al 2018 reported its anti-oxidant activity. Its seeds are prescribed in spermatorrhoea, and promotes spermatogenesis.

- *Ksharagada*

Research studies reveal, *Ksharagada* holds in total seventeen ingredients out of its most ingredients possessing anti-tumour / anti-cancer, gastro protective, anthelmintic activity, antibacterial anti-inflammatory, anti-bacterial, antimicrobial, antifungal and antitoxic action that is common in action .

Review done on *Ksharaagada* by Arvind at al. 2017 and Ranu at al. 2018 reported anti-toxic and antihelmintic action of *Ksharaagada*.

“*Sarvavisha shotha gulma tvagdoshasho bhangandarpleehashotha apasmarabhutaswarbheda pandu garana manda ritva kasam sonmaram nashayeyuratha pusam*”

Ksharaagada is one among the potent antitoxic formulation as per *Acharya Charaka*. According to *Acharya Sushruta Paneeya Kshara* (Su Su. 11/8) is one among the types of *kshara* which is indicated for internal usage. It is indicated in *garavisha, gulma, udara, krimi, pandu*, loss of appetite and other diseases.

Ksharaagada is prepared by cooking all the 17 ingredients in *kshara jala* and preparing it in *gutika* form. This may help to increase the palatability of *Kshara jala*. *Kshara jala*, and *laksha rasa* acts as binding agent for other drugs to form *gulika*. The drugs of *ksharaagada* are mainly having *katu, tikta rasa, ushna veerya, katu vipaka, kushtaghna, vishaghna, deepaneeya* and indicated in *kushta, Gulma, shula, udara*. These are reported to have anti-cancer, anti-inflammatory, anti-oxidant property. Together *ksharaagada* may possess *katu, tikta rasa, ushna veerya, katu vipaka, tiksha guna, lekhana, shophahara karma*. In *charaka chikitsa sthana 23/48 shloka* it is explained to have properties as *shophahara* and *lekhana* and *ambu* (water) is

explained as *anupana*. *Kshraraagada* may have anti-cancerous, anti-inflammatory, anthelmintic, anti-oxidant, hepato protective properties.

Ksharaagada is indicated especially in *shotha* (inflammation), by its *ushna tiksha*, *lekhana guna* it will act as *shopahara* and also most of the raw drugs have shown anti-inflammatory activity in various research works. It is said to be useful in liver disorders.

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