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CONCEPTUAL STUDY ON ANTI TOXIC EFFECT OF KSHARAGADA: A REVIEW

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ABSTRACT

Agada Tantra is a specialized branch of Ayurveda which mainly deals with Visha (Poison) and its management. There are number of Agada Yogas (formulations) which are unique because of the potent ingredients which are faster in action. Ksharagada is one among the several Agada Yogas which is explained in Charaka Samhita and Sushruta Samhita. According to Acharaya Charaka, Ksharagada is a formulation where Palasha Kshara is prepared and several other Vishaghna drugs are added to it. It is indicated in several complications of Visha such as Shotha (inflammation), Gulma (bloating), Twaka Dosha (skin ailments), Pandu (anaemia) etc. The ingredients are having antioxidant, antibacterial and hepatoprotective action. The main objective of this article is to discuss the therapeutic and pharmacological properties of Ksharagada as respect to toxicity.

KEYWORDS: Agada Tantra, Ksharagada, Visha.

INTRODUCTION

Agada Tantra is the branch of *Ayurveda* dealing with the management of poisonous bites and toxic combination.^[1] *Visha* is having many definitions indicating its mythological origin and action such as speedy spreading and separation of *Prana* from body. Drug is the most important part in treatment. The fundamentals of *Ayurvedic* pharmacology based on the theory of *Rasa, Guna, Veerya, Vipaka* and *Prabhava* are capable to give a better scientific lead in mode of drug action.^[2] *Ksharagada* is one of the formulation described by *Acharya Charaka* and *Acharya Sushruta*. It is indicated for the treatment of conditions manifested by poison such as.

Shotha (inflammation), Gulma (bloating), Twakdosa (skin ailments)

Pandu (anaemia), haemorrhoids, fistula-in-ano, liver diseases, anaemia

digestive ailments, respiratory ailments, psychological disturbances and also in *Krimi Roga*.^[3]

The ingredients of *Ksharagada* having antioxidant, antibacterial and hepatoprotective action.

AIM

To study the anti-toxic action of Ksharagada.

OBJECTIVES

1. To study the pharmacological and therapeutic action of *Ksharagada*.

2. To study the pharmacological and action of each ingredient of *Ksharagada*.

MATERIALS AND METHODS

Classical literature from *Charaka Samhita* was studied, and research work related to ingredients of *Ksharagada* were compiled from various international journals. Interpretation and correlation of research and classical information was done to draw definite results.

Method of preparation of Ksharagada

The medications are dusted and swirled into the prepared *Palasha* (Butea monosperma) *Kshara* while it cooks until the paste adheres to a spoon. This paste is used to create pills, which are then shade-dried.

Properties of Kshara

Kshara is mild, spreading, white in colour, elevated when smeared, easy to remove, and it doesn't secrete a lot of fluids. It is neither particularly penetrating nor particularly soft.^[4]

Ingredients an	nd pharm	nacodynamic	properties	s of <i>Ksharag</i>	ada

Sr. No	Drug	Botanical Name	Rasa	Guna	Veerya	Vipaka	Karma (Action)	Doshaghanta
1	Palasha	Butea monosperma Lam.	Katu, Tikta, Kashaya	Laghu, Ruksha	Ushna	Katu	Krimighna, Kushthaghna, Vishaghna	Kapha- Vatashamaka ^[5]
2	Gairik							
3	Haridra	Curcuma longa Linn.	Tikta, Katu	Ruksha, Laghu	Ushna	Katu	Krimighna, Kushthaghna, Vishaghna	Kapha- Vatashamaka Tikta Rasa- Pittashamaka ^[6]
4	Daruharidra	Berberis aristate DC	Tikta, Kashaya	Laghu, Ruksha	Ushna	Katu	Shothahara, Kandunashaka	Kapha- Pittashamaka ^[7]
5	Surasmanjari	Ocimum sanctum Linn.	Katu ,Tikta	Laghu, Ruksha	Ushna	Katu	Shothahara, Krimighna, Vishaghna	Kapha- Vatashamaka ^[8]
6	Madhuka	Glycyrrhiza glabra Linn.	Madhura	Guru, Snigdha	Sheeta	Madhura	Shothahara, Kandughna	Vata- Pittashamaka ^[9]
7	Laksha	Laccifer lacca	Katu, Tikta	Laghu,Snig dha	Ushna	Katu	Kushthaghna	Kapha- vatashamaka ^[10]
8	Saindhav	Rock salt	Lavana, Madhura	Snigdha, Tikshna, Sukshma	Sheeta	Madhura	Vrushya, Deepaniya	Tridoshhara ^[11]
9	Jatamansi	Nardostachys jatamansi DC	Tikta, Kashaya, Madhura	Laghu, Snigdha	Sheeta	Katu	Medhya, Balya, Kushthaghnaa	Tridoshahara ^[12]
10	Harenu	Vitex agnus	Katu, Tikta	Laghu	Sheeta	Katu	Deepana, Pachana, Medhya, Vishaghna	Kapha- Vatanashaka ^[13]
11	Hingu	Ferula narthex Boiss.	Katu	Laghu, Snigdha, Teekshna	Ushna	Katu	Deepana, Pachana, Rochana, Krimighna	Kapha- Vatashamaka ^[14]
12	Shweta Sariva	Hemidesmus indicus R. Br.	Madhura	Guru, Snigdha	Sheeta	Madhura	Kushthaghna, Vishaghna,Rochaka	Tridoshahara ^[15]
13	Krushna Sariva	Ichnocarpus frutescens	Madhura	Snighdha, Guru	Sheeta	Madhura	Kushthaghna, Vishamjwaranashaka	Tridoshahara ^[16]
14	Kushtha	Saussurea lappa C.B Clarke	Tikta, Katu, Madhura	Laghu, Ruksha, Teekshna	Ushna	Katu	Kushthaghna, Jwaraghna,	Kapha- Vatashamaka ^[17]
15	Shunthi	Zingiber officinale Rosc.	Katu	Laghu, Snigdha	Ushna	Madhura	Shothahara, Deepana, Pachana, Vrushya	Kapha- Vatashamaka ^[18]
16	Maricha	Piper nigrum Linn.	Katu	Laghu, Teekshna	Ushna	Katu	Deepana, pachana, Krimighna, Kushthaghna	Kapha- vatashamaka ^[19]
17	Pippali	Piper longum Linn.	Katu	Laghu, Snigdha, Teekshna	Anushna sheeta	Madhura	Krimighna, Kushthaghna	Kapha- vatashamaka ^[20]
18	Bahlika	Crocus sativus Linn.	Katu, Tikta	Snigdha	Ushna	Katu	Shothahara, Deepana, Pachana	Tridoshahara ^[21]

Chemical	Composition	of the ingredients	of Ksharagada.
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Sr. No.	Drug	Chemical Composition
1	Palasha	Kino acid, tannic acid, gallic acid, two flavonoids butrin & isobutrin ^[22]
2	Gairik	
3	Haridra	Curcumene, Curcumenone, Curcone, Curdione, Cineole, Curzerenone, Epiprocurcumenol, Eugenol, Camphene, Camphor, Bornel ^[23]
4	Daruharidra	Berberine, berbamine, oxycanthene, epiberberine, palmatine, dehydrocaroline, columbamine etc. ^[24]
5	Surasmanjari	Bornyl acete, cardinene, camphene, Camphor, Carvacrol, b- Carryophellene, Eugenol, palmitric acid, gallic acid methyl ether, humelene, Methyl chavicol ^[25]
6	Madhuka	Glycyrrhine, prenyated biaurone, licoagrone, isoflavone, liqcomarin, glyzaglabrin, quercitin, kaempferol, stragaion, liquoric acid, glabrotide, deoxoglabrotide, glycyrrhizic acid, liconicone, blabridin, liqurazid, liquiritin, glabranine ^[26]
7	Laksha	Resin, dye,wax,albuminous matter, mineral matter and water, resinoltannols of aleuritic acid, erythrolaccin, laconic acid. ^[27]
8	Saindhav	
9	Jatamansi	Actinidine, Carotene, Aristolens, Calarence, elemol, Droaristolene, B-eudesmol, Jatamols, Jatamansic acid, Jatamansone, Nardol, Nardostachonol, Nardostachone, Patchouli, Virolin, Angelivin, Jatamansin, Jatamansinol ^[28]
10	Harenu	Phenol, dulcitol, alkaloid-vitricine, B-sitosterol, camphene, A & B- Pinenes, Angoside, Acunbin, casticin, artemetin, orientin. ^[29]
11	Hingu	Ferulic acid, coumarins, sesquiterpene, terpenoids, galactose, 1-arabinose, rhamnose, glucuronic acid ^[30]
12	Sariva	Hyperoside, rutin,desinine,hexatriacontance, hemidesminine, hemidesmin-1& hemidesmin-2 ^[31]
13	Kushtha	Essential oil, costol, taraxas- terol, constunolide, Dehydro constuhactone, alpha-Cyclocostunolide, sitosterol, Sesquiterpenes, isodihydrocostuslacttone, costol-lactone ^[32]
14	Shunthi	Curumene, B-D- Curcumene, B-Bourbornene, d- Borneal, Citral, D- Camphene, Citronellol, Geraniol, Gingerol, a-&b-Zingiberenes, Zingiberol, Zingerone, Gingerols ^[33]
15	Maricha	Piperine, Piperethine, Piperolein A& B, feruperine, Dihydroferuperine, Citronellol, Cryptone, Dihydrocarveol, Piperonal ^[34]
16	Pippali	Piperine, Piperlongumine, Piperlonguminine, Pipernonaline, Piperundecalidine, Pipercide, Sesamin ^[35]
17	Bahlika	Terpenes, terpene alcohols, esters, crocin, picrocrocin, crocetin, carotenoids thiamine ^[36]

Properties of *Palasha*

Palasha having Katu, Tikta & Kashaya Rasa, Laghu, Ruksha Guna, Ushna Veerya & Katu Vipaka. Its having Krimighna, Kushthaghna & Vishaghna action. Due to all these properties its having Kapha- Vatashamaka effect.

Anti toxic action of Palasha

The flower of *Palasha* tree might exhibit liver protective activity as they decrease the levels of serum alanine phosphatase and alkaline transaminase. The two flavonoids butrin & isobutrin found in *Palasha* may potentially have some benefit for liver against toxicity. *Palasha* might help in wound healing by enhancing the rate of collagen synthesis & cellular proliferation at the site of infection.^[37]

Properties of Haridra

Haridra having Tikta & Katu Rasa; Ruksha, Laghu Guna, Ushna Veerya & Katu Vipaka. It shows Krimighna, Kushthaghna & Vishaghna action. Its having Kapha- Vatashamaka property & due to Tikta Rasa it shows Pitta Shamaka property.

Anti toxic action of Haridra

Volatile oils & curcumene of Curcuma longa exhibit potent anti- inflammatory effects. Due to its antiinflammatory properties it may be attributed to its ability to inhibit both biosynthesis of inflammatory prostaglandins from arachidonic acid, and neutrophil function during inflammatory states. It also having antioxidant, hepatoprotective, anticancer effects etc.^[38]

Properties of Daruharidra:

Daruharidra having Tikta & Kashaya Rasa; Ruksha, Laghu Guna, Ushna Veerya & Katu Vipaka. Its having Shothahara & Kandunashaka action. It shows Kapha-Pittashamaka property.

Anti toxic action of Daruharidra:

Daruharidra shows anti- allergic & anti- inflammatory property. The plant contains phytoconstituents like berbamine, berberine, oxycanthine epiberberine, columbamine etc. Due to these chemical constituents present in *Daruharidra* helps to act as an anti-allergic agent. It also shows pharmacological actions like anti-oxidant, antipyretic, anti-bacterial, anti- microbial, anti-hepatotoxic, anti- cancer etc.^[39]

Properties of Surmanjari (Tulsi)

Daruharidra having Katu & Tikta Rasa; Ruksha, Laghu Guna, Ushna Veerya & Katu Vipaka. Its having Shothahara, Krimighna & Vishaghna action. It shows Kapha-Vatashamaka property.

Anti toxic action of Surmanjari (Tulsi)

Eugenol & carvacrol are known to possess antimicrobial activity. Eugenol, palmitric acid, galic acid, etc are responsible for preventing dental caries, plaque, bad breath, tartar etc. It also have various pharmacological activities such as anti- inflammatory, anti- pyretic, analgesic, anti- asthmatic, antidiabetic, hepatoprotective, hypolipidemic etc.^[40]

Properties of *Madhuka*

Madhuka having Madhura Rasa; Guru, Snigdha Guna, Sheeta Veerya & Madhura Vipaka. Its having Shothahara & Kandughna action. It shows Vata-Pittashamaka property.

Anti toxic action of Madhuka

Chemical constituents like glycyrrhine, licoagrone, liqcomarin, glyzaglabrin,liquoric acid, glycyrrhizic acid, liconicone etc present in *Madhuka* acts as a hepatoprotective, antimicrobial, antiviral, antipyretic, antioxidant, anti- inflammatory. The photochemical that show anti-inflammatory and anti-allergic activity are found to be effective against cutaneous allergic reactions and can effectively be used in skin allergies.^[41]

Properties of Laksha

Laksha having Katu, Tikta Rasa; Laghu, Snigdha Guna, Ushna Veerya & Katu Vipaka. It shows Kushthaghna action. Due to all these, it shows Kapha- Vatashamaka property.

Anti toxic action of Laksha

Due to its astringent property it is used in bleeding wounds and hastens the healing process.It shows anti-inflammatory, anti- arthritic, anti- dysenteric, hepatoprotective property.^[42]

Properties of *Saindhav*:

Saindhav Lavana having Lavana & Madhura Rasa; Snigdha, Teekshna & Sukshma Guna, Sheeta Veerya & Madhura Vipaka. It shows Vrishya, Deepaniya etc. action. Due to all these, its having Tridoshahara property.

Anti toxic action of *Saindhav*

It helps in peeling dead skin cells, purifying skin pores and ensuring the regular skin layer to create solid and stimulated skin type. It helps in disposing of toxic minerals and refined salt store by invigorating circulation system and mineral equalization.^[43]

Properties of *Jatamansi*

Jatamansi having Tikta, Kashaya & Madhura Rasa;Laghu, Snigdha Guna, Sheeta Veerya & Katu *Vipaka*. It shows *Medhya*, *Balya & Kushthaghna* etc. action. Due to all these, its having *Tridoshahara* property.

Anti- toxic action of Jatamansi

It has several actions such as anticonvulsant, antiparkinson's, tranquillizing, hepato-protective, neuroprotective, hypotensive and antidiabetic.^[44]

Properties of Harenu

Harenu having Katu, Tikta Rasa; Laghu Guna, Sheeta Veerya & Katu Vipaka. It shows Deepan, Pachana, Medhya, Vishaghna etc. action. Due to all these, its having Kapha- Vatanashaka property.

Anti- toxic action of *Harenu*

PMS galactagogue, potentials as an insect repellant chemical constituent: alkaloids, flavonoids, diterpenoids, viterin casterin, & steroidal harmone, precursors, have been isolated, from chemical analysis.^[45]

Properties of Hingu

Hingu having Katu Rasa; Laghu, snigdha & Teekshna Guna. Ushna Veerya & Katu Vipaka. It shows Deepan, Pachana, Rochana & Krimighna etc. action. Due to all these, its having Kapha- Vatashamaka property.

Anti -toxic action of *Hingu*

It contain high amount of coumarins which are used to reduce blood clotting. This herb is anti- coagulant in nature that helps body to fight against high cholesterol levels & very helpful in reducing high blood pressure level. *Hingu* is very powerful anti- oxidant and protects body from the effect of various free radicals. It is an amazing spice for treating stomach ailments. It is antispasmodic and used to cure abdominal pain, intestinal problems, flatulence, worm infestation and irritable bowel syndrome. It also having antiinflammatory, anti- viral, antibiotic, antidiabetic action in nature.^[46]

Properties of Sariva

Sariva having Madhura Rasa; Guru, Snigdha Guna. Sheeta Veerya & Madhura Vipaka. It shows Kushthaghna, Vishamjwaranashaka etc. action. Due to all these, its having Tridoshahara property.

Anti-toxic action of Sariva

It contains large amounts of flavonoids and phenolic compounds, exhibits high antioxidant and free radical scavenging activities. Hemidesmus indicus contain rutin as active principle.The roots are used as antipyretic, antidiarrheal, diuretic, diaphoretic and for leporasy.^[47]

Properties of Kushtha

Sariva having Tikta, Katu, Madhura Rasa; Laghu, Ruksha, Teekshna Guna. Ushna Veerya & Katu Vipaka. It shows Kushthaghna, Jwaraghna etc. action. Due to all these, its having Kapha- Vatashamaka property.

Anti-toxic action of Kushtha

Saussurea lappa contains sesquiterpene lactones as major phyto-constituent. It exhibits anti-inflammatory, antiulcer, anti-cancer and hepato-protective activities.^[48]

Properties of Shunthi

Shunthi has Katu Rasa; Laghu Snigdha Guna, Ushna Veerya; Madhura Vipaka; Shothahara, Deepana, Pachana, Vrishya, action. It shows Kapha- Vatashamaka property.

Anti – toxic action of Shunthi

Zingiber officinale contains zingerol. It has immnomodulatory, anti-tumorigenic, ant-inflammatory, antiapoptic, anti-hyperglycaemic actions.^[49]

Properties of Maricha

Maricha has Katu Rasa; Laghu, Teekshna Guna; Ushna Veerya; Katu Vipaka; Krimihara, Kasahara Karma. It shows Kapha- Vatashamaka property.

Anti- toxic action of Maricha

Piper nigrum contains piperin as main phytoconstituent. It has ability to control worm infestations, cough and inflammations.^[50]

Properties of *Pippali*

Pippali has Katu Rasa; Laghu, Snigdha, Ruksha Guna; Anushna veerya, Madhura Vipaka; Deepaniya, Kusthahara, Rasayana (anti- ageing), Shoolaghna Karma.

Anti- toxic action of Pippali

Pippali have properties like anti allergic, antipyretic, analgesic and anti- inflammatory effect by virtue of its all properties helps in reducing ill effects of *Visha*.^[51]

Properties of *Bahlika*

Bahlika has Katu, Tikta Rasa; Snigdha Guna; Ushna Veerya, Katu Vipaka; Shothahara, Deepana, Pachana & Tridoshahara Karma.

Anti-toxic action of Bahlika

Crocus sativus is rich source of riboflavin and thiamine. It is a mild stimulant and is consider as promoter of immunity^[52]

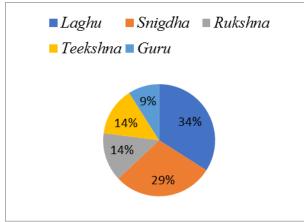
DISCUSSION

Ksharagada contains 18 drugs. These drugs possess various medicinal properties and hence used in all types of poison. Most of the drugs of *Ksharagada* having *Vataghna & Kaphaghna* property. By these properties the drugs of *Ksharagada* may give relief in various signs & symptopms of *Visha*.

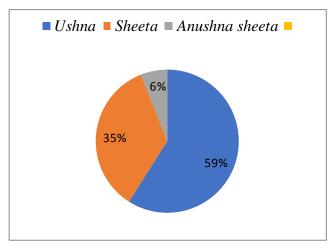
Proportionate distribution of various properties possessed by *Ksharagada* shows that 38% drugs have *Katu Rasa*, 28% drugs having *Tikta Rasa*, 21% drugs having *Madhura Rasa* 10% drugs have *Kashaya Rasa* & 3% drugs possesses *Lavana Rasa*. 34% dugs possess *Laghu* Guna, 29% dugs having Snigdha Guna, 14% possesses Ruksha & Teekshna Guna, 9% drugs possessess Guru Guna. 59% drugs are Ushna Veerya, 35% Sheeta Veerya & 6% is Anushna Sheeta. 65% drugs of Ksharagada having Katu Vipaka, 35% drugs contain Madhura Vipaka. Out of 18 drugs, 68% are Vaataghna, 12% are Pittaghna, 65% are Kaphaghna & 30 % are Tridoshaghna.

It contains *Palasha*, which promotes collagen synthesis and cellular proliferation at the infection site to aid in wound healing. Volatile oils & curcumene of Curcuma longa exhibit potent anti- inflammatory effects. Due to its anti- inflammatory properties it may be attributed to its ability to inhibit both biosynthesis of inflammatory prostaglandins from arachidonic acid, and neutrophil function during inflammatory states. Daruharidra shows anti- allergic & anti- inflammatory property. The plant contains phytoconstituents like columbamine, oxycanthine, epiberberine, berbamine, and berberine, among others. Due to these chemical constituents present in Daruharidra helps to act as an anti-allergic agent. Eugenol & carvacrol are known to possess antimicrobial activity. Eugenol, palmitic acid, galic acid, and other compounds found in tulsi are responsible for preventing dental cavities, plaque, bad breath, tartar, and other conditions. The phytochemical present in Madhuka shows anti-inflammatory and anti-allergic activity which are found to be effective against cutaneous allergic reactions and can effectively be used in skin allergies. Due to the its astringent property Laksha is used in bleeding wounds and hastens the healing process. In order to build a solid and stimulated skin type, Saindhava Lavana aids in removing dead skin cells, cleaning skin pores, and preserving the regular skin layer. Jatamansi has a number of effects, including those that are anticonvulsant, anti- Parkinson's, calming, hepato-protective, neuroprotective, hypotensive, and antidiabetic.. Harenu is most commonly used to treat premenstrual syndrome, infertility, acne, menopause etc. Hingu is very powerful anti- oxidant and protects body from the effect of various free radicals. It is considered as an amazing spice for treating stomach diseases. It is antispasmodic and used to cure abdominal pain, intestinal problems, flatulence, worm infestation and irritable bowel syndrome. Sariva root extract considerably reduces the effects of Doboi russellii venom-induced edoema, haemorrhage, and defibrinogenation. Moreover, reversed the it cardiotoxicity, neurotoxicity, and respiratory problems that Naja kaouthia venom caused in experimental animals. Sesquiterpene lactones are a major phytonutrient in Saussurea lappa. It exhibits antiinflammatory, antiulcer, anti-cancer and hepatoprotective activities. Shunthi is Shothahara, Vednahara, Vatanulomaka & Shoolprashamana drug. It is Rakta Shodhaka & Aama Pachaka in nature. Piper nigrum contains piperin as main phytoconstituent. It has ability to control worm infestations, cough and inflammations. Pippali have properties like anti allergic, antipyretic,

analgesic and anti- inflammatory effect by virtue of its all properties helps in reducing ill effects of *Visha*. Crocus sativus is rich source of riboflavin and thiamine.



Percentage of Rasa in Ksharagada



Percentage of Veerya in Ksharagada

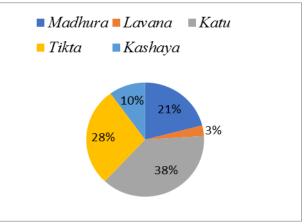
CONCLUSION

The majority of *Ksharagada's* constituents contain *Vishaghna, Krimihara, Kushthgna, Deepaniya,* and *Pachneeya Karmas.* Theoretically, the usage of *Ksharagada* is also justified in situations involving poisoning, worm infestations, skin illnesses, liver disorders, anorectal disorders, and allergy issues. A collective understanding of the chemical components, pharmacological characteristics, and anti-toxic activity of *Ksharagada* has been attempted in the current review. Although the market for *Ayurveda* goods is increasing dramatically because of its less side effects, the collective knowledge on these medications would inspire researchers and provide a path to future discovery of the pharmacological actions of these substances.

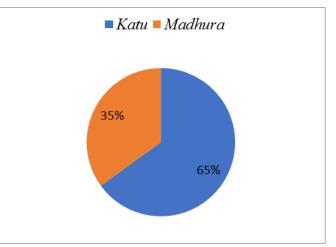
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It is a mild stimulant and is consider as promoter of immunity.



Percentage of Guna in Ksharagada



Percentage of Vipaka in Ksharagada

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