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REVIEW ARTICLE

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Pancha Shirishanama Agad - An Ethno-Ayurvedic **Formulation for Insect Bite**

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ABSTRACT

Agad Tantra is one among the branches of Ayurveda that deals with sign, symptoms and management of poisoning resulting from the bites of animal origin (Jangam Visha) like snakes (Sarpa), insects (Keet), spiders (Loota), rodents (Mooshika) etc as well as various toxic combinations of plants(inanimate) and mineral (Dhatu) poisons. To neutralize the effect of Visha (poison), administration of different Vishaghna (anti-toxic) formulations has been mentioned in classical texts. Pancha Shirishanama Agad is an ethno-Ayurvedic formulation indicated to be useful in the treatment of all types of Keet Visha (insect bite poison) and their associated symptoms. Pancha Shirishanama Agad consists of five parts of Shirish (seed, root, stembark, flower and leaves), Trikatu (Shunthi, Maricha, Pippali), Pancha Lavana (Saindhav Lavana, Sauvarchal Lavana, Samudra Lavana, Vid Lavana, Audbhidha Lavana) and Madhu. Almost all the ingredients are having Vedana Sthapana (analgesic) and Shothaghna (anti-inflammatory) properties as Vedana (pain), Sopha (swelling), Kandu (itch) and Jwara (fever) are the primary symptoms of Keet Visha Damsha (insect bite poison). Through this paper, an attempt has been made to understand the properties of all the ingredients of Pancha Shirishanama Agad in detail.

Key words: Agad Tantra, Pancha Shirishanama Agad, Keet Visha, Insects, insect bites, Shirish, Albizia lebbeck, Vishaghna.

INTRODUCTION

Ayurveda is the science of life that aims at mitigating the diseases of diseased and maintenance of health of the healthy person. Agad Tantra is one among the

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branches of Ayurveda that deals with sign, symptoms and management of poisoning resulting from the bites of animal origin (Jangam Visha) like snakes (Sarpa), insects (Keet), spiders (Loota), rodents (Mooshika) etc. as well as various toxic combinations of plants (inanimate) and mineral (Dhatu) poisons.[1]

Insects are called *Keet* as they are produced from the Keeta or waste products like semen, excreta, urine, decomposed carcass and eggs of the snakes. Keet possess features (qualities) of air, fire and water and are of many kinds. Keet (insects) are classified into different categories based on their Dosha Prakriti. Hence there are four types - Vayavya (Vatika), Agneya (Paittika), Soumya (Kaphaja) and (Sannipatika). [2] According to Vachaspatya, it is defined that Krimibhyah Sthoole Kshudra Jantu Bhede i.e., Keet is a variety of Krimi with macroscopic body. According

to the definition, these may or may not be seen with naked eye. Therefore, they can even be interpreted as insects, worms and even microbes.^[3]

In contemporary view, insects are arthropods belonging to the class Insecta. Insecta comprise the most diverse and numerous species of flies, bees, wasps, ants, lice, butterflies, dragonflies, mosquitoes etc. Insect represents more than half of all known living organism and potentially represent more than 90% of the differing life forms on earth. [4] Insects play vital roles in our environment, contributing to the balance and well-being of ecosystems in numerous ways. Insects form the base of many food chains. They are beneficial in cases of honey production, pollination, and decomposition by acting as scavengers and decomposers, aerating the soil, silk production, lac production, carmine red dye and many more. Their role in sustaining wildlife is invaluable.^[5] So, their contact with human is very common and after bite of the insects, various types of symptoms appear in the body due to their poisoning effect. Some common symptoms are pain in the affected area or in the muscles, swelling, fever, redness, itching, numbness or tingling in the affected area. The venom injected into the body from the bite or sting of an insect will cause immune system to respond. Often, human body's immediate response will include pain, redness and swelling at the bite or sting site. Minor delayed reactions include itching and soreness. If a person is very sensitive to an animal's venom, bites and stings can cause a potentially fatal condition called anaphylactic shock.[6]

Acharya Sushrut has mentioned 67 types of Keet (insects) under the category of Jangam Visha (animate) in Keet Kalpa Adhyaya of Kalpastana along with their signs and symptoms. Acharya Charak and Acharya Vagbhatta also described in detail about Keet (insects) and Keet Visha Damsha Lakshan (insects bite associated symptoms) in their treatise. Vedana (pain), Sopha (inflammation), Kandu (itching) and Jwara (fever) are some of the main common symptoms of Keet Visha Damsha (insects bite poison). All the Acharyas mentioned about use of various types of medicinal plants and Agad formulations specially for

the treatment of *Keet Visha* (insect bite poison) and their associated symptoms in the *Samhitas*. One such *Agad* is *Pancha Shirishanama Agad* described in *Sarpa Dashta Visha Chikitsa Kalpa Adhyaya* chapter 5 in the verse 81 that is said to be useful in the treatment of all kinds of *Keet Visha* (insect bite poison) and their associated symptoms. Later, the name of this particular *Agad* has been mentioned by *Acharya Dalhan* in his commentary on *Sushrut Samhita*.

सम्लपुष्पाङ्कुरवल्कबीजात् क्वाथः शिरीषात् त्रिकटुप्रगाढः ।। सलावणः क्षौद्रयुतोऽथ पीतो विशेषतः कीटविषं निहन्ति ।। (सु. क 5/81)

[अयमगदः पञ्चशिरीषनामा ।। डल्हण टीका निबंध संग्रह स्.क. 5/81]

AIM AND OBJECTIVE

Through this paper an attempt has been made to understand the properties and *Rasa Panchak* of all the ingredients of *Pancha Shirishanama Agad* in detail.

REVIEW OF LITERATURE

Acharya Sushrut has described Keet in his treatise after the chapters on snakes (Sarpa Damshta Visha Vigyaniya) and rodents (Mooshika Kalpa) as Keet are born from semen, excreta, urine, foul smelling, and eggs of snakes. Hence, Pancha Shirishanama Agad has been indicated especially in Keet Visha as one of the potent formulations to treat all the modalities related to insect bite poisoning and their associated symptoms.

Pancha Shirishanama Agad consists of five parts of Shirish (seed, root, stem bark, flower and leaves), Trikatu (Shunthi, Maricha, Pippali), Pancha Lavana (Saindhav Lavana, Sauvarchal Lavana, Samudra Lavana, Vid Lavana, Audbhidha Lavana) and Madhu.

Many drugs and formulations have been described as *Vishaghna* (anti-poisonous) among which one of the most important and commonly used drugs is *Shirish* and it is said to be best among all the *Vishaghna* (anti-poisonous) drugs.^[11] *Shirish* and its parts are used in various *Agad Yogas* to overcome *Visha Prabhav* (poisonous effect). *Acharya Charak* kept *Shirish* under

Vishaghna Gana, Vedana Sthapana Gana, Shirovirechana and Kshaya Skanda. Acharya Sushrut kept Shirish under Salsaradi Gana. Acharya Vagbhatta kept it under Asanadi Gana. Acharya Bhavprakash has mentioned its use in Shotha (inflammation). [12]

Under contemporary parameters the plant Shirish (*Albizia lebbeck (L.) Benth* shows Analgesic, Anti-inflammatory, immune-modulator, Anti-rhinitic, free radical scavenging and mast cell stabilizing property.^[13]

Ingredients

The ingredients of *Pancha Shirishnama Agad* are mentioned in the Table 1.

Table 1: Ingredients of Pancha Shirishanama Agad [14]

Ingredients	Botanical / Latin name	Family	Chemical constituent	Part used
Shirish	Albizia lebbeck (L) Benth	Fabaceae	Phenolic glycoside, Tannin, Albizin, Flavanols, Saponins	Root, Flower, Leaf buds, Stembark, Seed
Shunthi	Zingiber officinale Rosc	Zingiberace ae	Zingiberene, Shagol, Zingiberol, Gingerol, Gingerin, Paradols	Rhizome
Maricha	Piper nigrum linn	Piperaceae	Piperine, Piperidine, Piprettin, Chavicine	Fruit
Pippali	Piper longum linn	Piperaceae	Piperine, Piplartine, Sesamin, Piplasterol	Fruit

Pancha Lavana (Five salts)[15]

Ingredients	Chemical composition	
Saindhava Lavana (Chloride of Sodium)	Sodium chloride (NaCl) - 97.6% Sodium Bicarbonate (NaHCO3) - 0.07% Insoluble matters - 0.031%	

Sauvarchal Lavana (Sochal salt)	Sodium Chloride (NaCl) - 97.8% Total sulphide (Na2S) - 0.981% Iron (Fe) - 0.03% Insoluble matters - 0.07%
Samudra Lavana (Sea salt)	Sodium Chloride (NaCl) - 91.3% Total Sulphide (Na2S) - 0.121% Iron (Fe) - 0.0089% Calcium Sulphate, Magnesium Sulphate, Magnesium Chloride etc in little quantities.
Vid Lavana (Ammonium salt)	Sodium Chloride (NaCl) - 93.7% Total Sulphide (Na2S) - 0.121% Iron (Fe) - 0.0089%
Audbhida Lavana (Reha salt)	Sodium Chloride (NaCl) - 94.10% Total Sulphide (Na2S) - 0.042% Sodium Bicarbonate (NaHCO3) - 0.049%

Madhu (Honey)[16]

Ingredient	Chemical cons	stituent	Pharmaco	ological actions
Honey	,	Glucose, Minerals, s etc		mmatory, Anti- Anti-bacterial, obial

Method of Preparation^[17,18]

All the five parts of *Shirish* are to be taken in equal quantity, cleaned individually, dried and then subjected for *Yava Kuta* (Coarse powder). Coarsely powdered form is then boiled with 16 parts of water and reduced to 1/8th part and to be filtered to obtain a decoction (*Kwatha*). 2 *Pala* (96 ml) is taken in a container and mixed with 1 *Shana* (5 gms) of each *Trikatu Choorna*, *Pancha Lavana* and *Madhu*.

Method of Administration^[19]

This *Agad* can be administered in the form of decoction (*Kwatha*).

Dose of Pancha Shirishanama Agad^[20]

Reference regarding the dosage of *Pancha Shirishanama Agad* is not seen in *Ayurvedic* literature.

As per *Sharangdhar Samhita*, dosage and time of administration of the human dose of *Kwatha Kalpana* is said to be 2 *Pala* (96 ml) per time in a day.

Probable Action of Pancha Shirishanama Agad

It is having indication as *Visheshtah Keetvisham Nihanti* i.e., it relieves the poisoning effect of insect bite and

their associated symptoms. This property may be due to the *Prabhava* of the formulation as *Shirish* is said to the best as *Vishaghna* (anti-poisonous) *Dravya Shirisha Vishaghnanama Shreshtham*.^[21] The properties of the formulation can be understood by properties of individual ingredients.

Table 2: Properties of ingredients^[22]

Drug	Rasa	Guna	Virya	Vipaka	Karma
Shirish ^[23]	Madhur (sweet), Tikta (bitter), Kashaya (astringent)	Laghu (light), Ruksha (dry), Teekshna (sharp)	Ishat Ushna	Katu (pungent)	Tridosha Shamak (vitiates Vata Pitta Kapha humor), Vishaghna (anti-poisonous), Shothaghna (anti-inflammatory), Jwaraghna (anti- pyretic), Vedana Sthapana (analgesic), Rakta Shodhak (blood purifier), Kushthaghna (skin disorders), Kandughna (anti- pruritis), Shirovirechak (head purifier)
Shunthi ^[24]	Katu (pungent)	Laghu (light), Snigdha (unctuous)	Ushna (hot)	Madhur (sweet)	Kapha-Vata Shamak (vitiates Vata and Kapha humor), Shoola Prashamana (analgesic), Shothaghna (anti-inflammatory), Jwaraghna (anti- pyretic), Rakta Shodhak (blood purifier), Panduhara (Prevent anaemia),
Maricha ^[25]	Katu (pungent)	Laghu (light), Teekshna (sharp)	Ushna (hot)	Katu (pungent)	Kapha-Vata shamak (vitiates Kapha Vata humor), Vishaghna (anti- poisonous), Shoola Prashamana (Analgesic), Visham Jwaraghna (anti-pyretic), Rakta Shodhak (blood purifier), Yakrita Uttejak (prevents liver disorder), Krimighna (anti- helminthic), Kushthaghna (prevents skin disorder)

Pippali ^[26]	Katu (pungent)	Laghu (light), Teekshna (sharp), Snigdha (unctuous)	Anushna Sheeta	Madhur (sweet)	Vata Kapha Shamak (Balance Vata and Kapha humour), Visham Jwaraghna (anti-pyretic), Rakta Shodhak (blood purifier), Yakrita Uttejak (prevents liver disorders), Pliha Vriddhiha (prevents spleen disorders), Jantughna (anti- helminthic), Rasayana (rejuvenation)
Pancha Lava	ına (five salts) ^{[2}	7]			
Saindhava Lavana	Lavana (salty)	Laghu (Light), Snigdha (Unctous), Teekshna (Sharp)	Sheeta (cold)	Madhur (sweet)	Tridosh Shamak (Vitiates Vata Pitta Kapha Humor), Agnideepak (gastrostimulant), Pachana (digestive), Hridya (prevent heart), Shothaghna (anti-inflammatory), Vibhandhaghna (prevents constipation), Vrana Ropana (wound healing)
Sauvar- Chal Lavana	Madhur (sweet)	Laghu (Light), Vishada (Clearness) Snigdha (Unctous), Sukshma	Ushna (Hot)	Madhur (sweet)	Vatashamana (balance Vata humor), Agnideepak (gastro-stimulant), Pachana (digestive), Anuloman (prevents gastritis), Jantughna (anti-helminthic), Shoolaghna (analgesic)
Samudra Lavana	<i>Lavana</i> (salty)	Snigdha (unctuous) Laghu (light), Avidaahi	Na-ati ushna, Na-ati sheeta	Madhur (sweet)	Kapha-Vata Shamak (vitiates Kapha Vata humor), Agnideepak (gastrostimulant), Ruchikar (prevents fainting)
Vid Lavana	Lavana (salty)	Laghu (Light), Ushna (Hot), Teekshna (Sharp), Vyavayi, Sukshma	Ushna (hot)	Madhur (sweet)	Kapha Shamak (vitiates Kapha humor), Vatanuloman (prevents gastritis), Agnideepak (gastrostimulant), Shulaghna (analgesic), Jwaraghna (anti-pyretic)

Audbhida/ Reh Lavana	Tikta (Bitter), Katu (Pungent), Kshara	Kshareeya, Teekshna (sharp)	Ushna	Katu	Kapha Shamak (vitiates Kapha humor), Vatanulomak (prevents gastritis), Agnideepak (gastrostimulants)
Madhu ^[28]	Madhur Ras(sweet), Kashaya Anuras (astringent)	Guru (heavy), Ruksha (dry),	Sheeta (cold)	-	Kapha-Pitta Shamak (vitiates Kapha Pitta humor), Vishaghna (anti- poisonous), Krimighna (anti-helminthic), Rasayana (rejuvenating), Vrana Shodhak (wound healing), Yogvaahi

DISCUSSION

Acharya Sushrut indicated Pancha Shirishanama Agad especially in Keet Visha as one of the potent formulations to treat all the modalities related to insect bite poisoning and their associated symptoms. As per different Ayurvedic texts, the common symptoms due to Keet Visha (insect bites) includes Shoola/Vedana (pain), Shotha (swelling), Toda (pricky and knotty pain), Daha (burning sensation), Kandu (Itching) and Jwara (fever).

As per contemporary texts, after bite of the insects, various types of symptoms appear in the body due to their poisoning effect. Some common symptoms are pain in the affected area or in the muscles, swelling, fever, redness, itching, numbness or tingling in the affected area. The venom injected into the body from the bite or sting of an insect will cause immune system to respond. Often, human body's immediate response will include pain, redness and swelling at the bite or sting site. Minor delayed reactions include itching and soreness. Though, we can assume that the formulation can be used in conditions like pain, inflammation, skin disease, pyrexia, gastro intestinal disorder, etc.

Shirish works due to its *Prabhav* that act as a potent *Vishaghna* (anti-poisonous) and *Vedana Sthapana* (analgesic) ingredient. Under contemporary parameters the plant *Shirish* (*Albizia lebbeck* (*L.*) *Benth* shows Analgesic, Anti-inflammatory, immunemodulator, Anti-rhinitic, free radical scavenging and

mast cell stabilizing property. Shunthi acts on swelling due to Shothaghna (anti-inflammatory) and Kapha Shamak (vitiates Kapha humor) properties. Shunthi and Pippali helps to reduce fever and purifying blood due to their Jwaraghna (anti-pyretic) and Rakta Shodhak (blood purifier) properties. Sauvarchal Lavana and Vid Lavana acts on pain due to Vatahara (vitiates Vata humor) and Shoolaghna (analgesic) properties. Saindhav Lavana act as a wound healing ingredient due to Shothaghna (antiinflammatory) and Vrana Ropana (wound healing) properties. Shirish, Pippali, Maricha, Saindhav Lavana and Madhu have Vishaghna (anti-poisonous), Rakta Shodhak (blood purifier), Jantughna (anti-helminthic) and Vrana Ropana (wound healer) actions which helps to combat poisoning condition and its complications. Almost all the ingredients are having Vedana Sthapana (analgesic) and Shothaghna (anti-inflammatory) properties as Vedana (pain), Shotha (swelling), Kandu (itch) and Jwara (fever) are the primary symptoms of Keeta Visha Damsha (insect bite poison). This formulation will help in relieving the symptoms of poisoning due to its numerous and varied properties and actions.

Symptoms	Karma	Pancha Shirishanama Agad
Toxic reaction	Vishaghna	Shirish, Maricha, Madhu
Pain	Shoolaghna, Shoola Prashamana	Shirisha, Trikatu, Sauvarchal Lavana, Vid Lavana

Inflammation and oedema	Shothaghna	Shirisha, Saindhav Lavana, Shunthi
Necrosis	Vrana Ropana	Saindhav Lavana, Madhu
Nausea	Deepana, Pachana, Agnideepak	Trikatu, Saindhav Lavana, Sauvarchal Lavana, Vid Lavana, Samudra Lavana
Indigestion	Vata Anulomana, Vibandhaghna, Vishaghna/Gara Nashan	Trikatu, Pancha Lavana
Microbial infestation	Jantughna, Krimighna	Maricha, Pippali, Sauvarchal Lavana, Madhu
Kandu (itching) and skin disorders	Rakta Shodhak	Shirisha, Trikatu, Madhu
Fever	Jwaraghna	Shirisha, Trikatu, Vid Lavana
Fainting (Moorccha)	Hrudya, Ruchikar, Shirovirechak	Shirisha, Shunthi, Pippali, Samudra Lavana
Hepatopathy	Yakritta Uttejak	Maricha, Pippali
Debilitation	Rasayan	Madhu, Pippali

CONCLUSION

Insects play vital roles in our environment contributing to the balance and well-being of ecosystems in numerous ways. Their role in sustaining wildlife is invaluable. So, their contact with human is very common and after bite of the insects, various types of symptoms appear in the body due to their poisoning effect. Pancha Shirishanama Agad is one of the Vishaghna (anti-poisonous) Yoga said to be very effective in the management of Keet Visha (insect bite poisoning) and their associated symptoms. Pain (Vedana), Swelling (Sopha/Shotha), itching (Kandu) and fever (Jwara) are the primary symptoms of insect bite (Keet Damsha). So, we can assume to cure these symptoms by the use of Pancha Shirishanama Agad. All parts of Shirish are extensively used as a general and universal antidote in traditional medicines. The

ingredients of the formulation are easily available and method of preparation is also simple. Majority of the drugs are *Tikta* (bitter), *Katu* (pungent) *Rasa Pradhan* that acts as *Kapha-Vata Shamak* (pacifies *Kapha & Vata* humor). Most drugs are *Ushna Veerya* (hot potency) and *Katu Vipaka* hence they will quickly act as a *Prativisha* (antidote) in *Keet Visha* (insects bite poison). The multifield pharmacological properties and actions of the ingredients will make it worth of use not only in insects bite conditions but also in other conditions like pain, inflammation, skin manifestation, gastroenteritis, indigestion, fever etc. Further research must be needed to explore its efficacy in poisoning and to treat its associated symptomatic conditions.

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