**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, stem bark, flower and leaves), Trikatu (Shunthi, Maricha, Pippali), Pancha Lavana (Saindhav Lavana, Sauvarchal Lavana, Samudra Lavana, Vid Lavana, Audbhida 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 Damsa (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 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 Pranahara (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.[7] Acharya Charak and Acharya Vagbhatta also described in detail about Keet (insects) and Keet Visha Damsha Lakshan (insects bite associated symptoms) in their treatise. [8,9] Vedana (pain), Sopha (inflammation), Kandu (itching) and Jwara (fever) are some of the main common symptoms of Keet Visha Damsha (insects bite poison).[10] 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.

Aim and Objectives

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 Dashta 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 Vishagha (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 Vishagha (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

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 Shirishnama Agad***[14]

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

**Pancha Lavana (Five salts)**[15]

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Chemical composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saindhava Lavana (Chloride of Sodium)</td>
<td>Sodium chloride (NaCl) - 97.6%</td>
</tr>
<tr>
<td></td>
<td>Sodium Bicarbonate (NaHCO3) - 0.07%</td>
</tr>
<tr>
<td></td>
<td>Insoluble matters - 0.031%</td>
</tr>
</tbody>
</table>

**Sauvarchal Lavana (Sochal salt)**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Sodium Chloride (NaCl) - 97.8%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total sulphide (Na2S) - 0.981%</td>
</tr>
<tr>
<td></td>
<td>Iron (Fe) - 0.03%</td>
</tr>
<tr>
<td></td>
<td>Insoluble matters - 0.07%</td>
</tr>
</tbody>
</table>

**Samudra Lavana (Sea salt)**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Sodium Chloride (NaCl) - 91.3%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Sulphide (Na2S) - 0.121%</td>
</tr>
<tr>
<td></td>
<td>Iron (Fe) - 0.0089%</td>
</tr>
<tr>
<td></td>
<td>Calcium Sulphate, Magnesium Sulphate, Magnesium Chloride etc. - in little quantities.</td>
</tr>
</tbody>
</table>

**Vid Lavana (Ammonium salt)**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Sodium Chloride (NaCl) - 93.7%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Sulphide (Na2S) - 0.121%</td>
</tr>
<tr>
<td></td>
<td>Iron (Fe) - 0.0089%</td>
</tr>
</tbody>
</table>

**Audbhida Lavana (Reha salt)**

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Sodium Chloride (NaCl) - 94.10%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Sulphide (Na2S) - 0.042%</td>
</tr>
<tr>
<td></td>
<td>Sodium Bicarbonate (NaHCO3) - 0.049%</td>
</tr>
</tbody>
</table>

**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 Shirishnama Agad***[20]

Reference regarding the dosage of *Pancha Shirishnama 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 be the best as Vishaghna (anti-poisonous) Dravya Shirisha Vishagnanama Shreshtham. The properties of the formulation can be understood by properties of individual ingredients.

### Table 2: Properties of ingredients

<table>
<thead>
<tr>
<th>Drug</th>
<th>Rasa</th>
<th>Guna</th>
<th>Virya</th>
<th>Vipaka</th>
<th>Karma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shirish</td>
<td>Madhur (sweet), Tikta (bitter), Kashaya (astringent)</td>
<td>Laghu (light), Ruksha (dry), Teekshna (sharp)</td>
<td>Ishit Ushna</td>
<td>Katu (pungent)</td>
<td>Tridosha Shamak (vitiates Vata Pitta Kapha humor), Vishaghna (anti-poisonous), Shothagghna (anti-inflammatory), Jwaraghna (anti-pyretic), Vedana Sthapana (analgesic), Rakta Shodhak (blood purifier), Kushthaghna (skin disorders), Kundughna (anti-pruritis), Shirovirechak (head purifier)</td>
</tr>
</tbody>
</table>
| Shunthi  | Katu (pungent) | Laghu (light), Snigdha (unctuous) | Ushna (hot) | Madhur (sweet) | Kapha-Vata Shamak (vitiates Vata and Kapha humor), Shoola Prashamana (analgesic), Shothagghna (anti-inflammatory), Jwaraghna (anti-pyretic), Rakta Shodhak (blood purifier), Panduhara (Prevent anaemia), |}
| Maricha  | 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), |
### Panna Lavana

<table>
<thead>
<tr>
<th>Pippal(26)</th>
<th>Katu (pungent)</th>
<th>Laghu (light), Teekshna (sharp), Snigdha (unctuous)</th>
<th>Anushna Sheeta</th>
<th>Madhur (sweet)</th>
<th>Vata Kapha Shamak (Balance Vata and Kapha humour), Visham Jwaraghna (anti-pyretic), Rakta Shodhok (blood purifier), Yakrita Uttejak (prevents liver disorders), Pliha Vridhiha (prevents spleen disorders), Jantughna (anti-helminthic), Rasayana (rejuvenation)</th>
</tr>
</thead>
</table>

### Pancha Lavana (five salts)(27)

<table>
<thead>
<tr>
<th>Saindhava Lavana</th>
<th>Lavana (salty)</th>
<th>Laghu (Light), Snigdha (Uncotous), Teekshna (Sharp)</th>
<th>Sheeta (cold)</th>
<th>Madhur (sweet)</th>
<th>Tridosh Shamak (Vitiates Vata Pitta Kapha Humor), Agnideepak (gastrostimulant), Pachana (digestive), Hridya (prevent heart), Shothaghna (anti-inflammatory), Vibhandthagha (prevents constipation), Vrana Ropana (wound healing)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Sauvar-Chal Lavana</th>
<th>Madhur (sweet)</th>
<th>Laghu (Light), Vishada (Clearness) Snigdha (Uncotous), Sukshma</th>
<th>Ushna (Hot)</th>
<th>Madhur (sweet)</th>
<th>Vataashamana (balance Vata humor), Agnideepak (gastro-stimulant), Pachana (digestive), Anuloman (prevents gastritis), Jantughna (anti-helminthic), Shoollahnah (analgesic)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Samudra Lavana</th>
<th>Lavana (salty)</th>
<th>Snigdha (unctuous)</th>
<th>Na-ati ushna, Na-ati sheeta</th>
<th>Madhur (sweet)</th>
<th>Kapha-Vata Shamak (vitiates Kapha Vata humor), Agnideepak (gastrostimulant), Ruchikar (prevents fainting)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Vid Lavana</th>
<th>Lavana (salty)</th>
<th>Laghu (Light), Ushna (Hot), Teekshna (Sharp), Vyavayi, Sukshma</th>
<th>Ushna (hot)</th>
<th>Madhur (sweet)</th>
<th>Kapha Shamak (vitiates Kapha humor), Vatanuloman (prevents gastritis), Agnideepak (gastrostimulant), Shuloagha (analgesic), Jwaraghna (anti-pyretic)</th>
</tr>
</thead>
</table>
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, gastrointestinal 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, immune-modulator, 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. Trikatu, 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 (anti-inflammatory) and Vrana Ropana (wound healer) properties. Shirish, Pippali, Maricha, Saindhav Lavana and Madhu have Vishaghna (anti-poisonous), Rakta Shodhak (blood purifier), Jantughna (anti-helminthic) and Vrana Shodhak (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 Damshka (insect bite poison). This formulation will help in relieving the symptoms of poisoning due to its numerous and varied properties and actions.
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, Vibandhagha, 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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