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STUDY OF DIFFERENT ASPECTS ABOUT OF KEETA VISHA - A REVIEW ARTICLE

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ABSTRACT

Insects are the largest group of animals, which constitute 75% of all living animals. Although only 2% of the insect species are horrible to man. There are various types of insects found in universe such as ants, bees, wasps, spiders and mosquitoes etc. Ant (Pipilika) causes swelling, burning, edema at site of bite & itching. Bees (Makshika) cause itching, swelling, burning sensation & pain. Wasp (Kanabha) poisoning cause swelling body aches, feeling of heaviness of the body and the site of bite will black**.** In Ayurveda, *Acharya Charaka* has mentioned two types of *keeta* such as *Dushivisha keeta* and *Pranhara keeta*. *Acharya Sushrut* has mentioned four groups of *keeta* and their poisoning and treatment in *Kalpa sthan*. These are divided in four groups as *Vayavya, Agneya,Saumya*, and *Sannipataka keeta*. *Vayavya keetas* are eighteen types their bites aggravates *Vata dosha*. *Agneya keetas* are twenty four in number their bites aggravates *Pitta dosha*. *Saumya keetas* are thirteen types and aggravates *Kapha dosha* in the body.*Sannipataka keetas* are twelve types their bites aggravates all three *doshas* and their poisoning resemblance to snake bite. Poisonous insect causes nausea, vomiting, difficulty in breathing, abdominal pain, blister swelling, burning sensation, itching, redness and pain etc. Insect venom composed of proteins, peptides, enzymes, and other smaller molecule that may activate an allergic reaction in injured persons. This article can help to identify various types of insects (*Keeta*) and their poisoning. Poisoning/stings by ant, bees and wasps should be removed and Ayurvedic treatment can help relieves symptoms that are mentioned in this article.

Keywords: *Keeta visha*, Insect poisoning, Venom.

INTRODUCTION

Ayurveda is oldest medical science known to mankind and mainly aims at healthy living and long life unlike other medical science which simply focus on the treatment of ailments and diseases. According to Ayurvedic science, there should be proper balance between the inner constituent elements of the body for a healthy existence.[1] One of these branches is the *Agada tantra. Agada tantra*[2] or toxicology is a branch of *Ashtang Ayurveda*, which includes the science of poisons. The tradition of *Agada tantra* practice is very ancient. It originated from the school of toxicology, which was founded and run by *Kashyapa*, also known as *Vriddhakashyapa,* the great saint and medical practitioner. The students of the *Kashyapa* School of toxicology later became royal *vaidyas* (doctors) in various kingdoms and

were meant to protect the members of the royal families from being poisoned. They were at times also used to administer poison to their king's enemies. Even now the traditional practice of toxicology is done by different families of *Vishavaidyas* (poison doctors) who claim to be specialists in toxicology in various parts of Indian subcontinent. *Damstra* or *Visha chikitsa*, as the *Aganda Tantra* is popularly known, deals with various methods of cleaning the poisons out of the body as well as recommends antidotes for particular poisons. It deals with a wide range of natural toxins originating from wild lives like animals, birds, insects. According to Ayurveda, *Acharya Charaka* has mentioned two types of *keeta* first is *Dushivisha keeta* and another is *Pranhar keeta*[3]. *Acharya Sushrut* has mentioned sixty seven varieties of *keeta* under four groups, their poisoning and treatment in *Kalpa sthan.* Four groups of *keeta* divided as *Vayavya, Agneya, Saumya, Sannipataka*[4]. According to modern, venomous insect are three orders of toxicologically importance in class insecta Hymenoptera, Lepidoptera, Coleoptera[5].

AIM AND OBJECTIVES:

- To study about types of *keetas* described in our Ayurvedic texts.
- To evaluate and discuss about *keeta visha* and their sign, symptom, effect on body.

MATERIAL AND METHOD:

The study on *keeta visha* and their effect on our body was done with the help of with the help of our Ayurvedic text books especially *Sushrut samhita* and conceptual and summarised data of different modern books and different review articles.

CONCEPTUAL STUDY

***Ketotpatti* (Genesis of insects)**

In *Shushrut Samhita keeta visha* described in *Shushrut Kalpa sthana* Chapter-8.

According to *Shushrut Kitotpatti* as-

Sarpanam shukravinmutrashavputyandasambhava
Vayvgnymbuprakrityah kitastu vividhah smritah ... (Shu.K.8/3)

Keetas are born from the semen, excreta, urine, fowl smelling and eggs of snakes. They possess features of air, fire, water and of many kinds.[6]

Classification:

According to Charak, *keeta* are arises from faces and urine of snakes.[7]

Sarpanameva Vinmutrat keetah syuh Keetsammatah
Dushivishah Pranhara iti Samkshepato matah....(Ch.chi.23/140)

These are of two kinds- *Dushi Visha* (chronic poison) and *Pranhara (*deadly poison)

POISONOUS FEATURE OF *DUSHI VISHA*:

Gatram Raktam Sitam Krisham Shyavam va Pidikanvitam
Sakandudahveesarppaki Syat Kuthitam Tatha

In bites of *dushivisha* insects, the part becomes red, white, blackish, covered with boils, associated with itching, burning, spreading and inflammation and gets necrosed.[8]

POISONOUS FEATURE OF *PRANHARA KEETA*:

Sarpadashte Ytha Shotho Vardhate Sogragandhyasrik
Damshoakshigauravam Murccha Sa Rugartah Shvsityapi
Trishnaruchipareetashcha Bhaved Dushivisharditah... (Ch.Chi.23/142-43)

The swelling increases as in snake bite, the bitten spot contain contains blood with intense odour, there are heaviness in eyes, fainting, pain, dyspnoea, thirst and anorexia. [9]

Table 1: According to *Sushurut*:

S.No.	Types	No.
1.	*Vayavya Keeta*	**18**
2.	*Agneya Keeta*	**24**
3.	*Saumya Keeta*	**13**
4.	*Sannipataka Keeta*	**12**

1. *VAYAVYA KITA*

These are eighteen types and bites by these leads to vataja disease.

Kumbhsa, Tundikeri, Sringi, Satakulira, Uccitinga, agninma, Ciccitinga, Mayurika, Avartaka, Aurabhra, Sarikamha, Vaidala, Saravakurda, Abhiraji, Parusa, Citrasirsak, Asatabahu and Raktaraji.[10]

2. *AGNEYA KITA*

These are twenty four types. Their bites produce disease caused by aggravation of pitta.

Kaundinyak, Kanabhaka, Varati, Patravrishika Vinasika, Brahmnika, Bindula, Bhramara, Bahyaki, Picchita, Kumbhi, Varchakita, Arimedak, Padmakita, Dandubhika, Makara, Shatpadaka Panchalaka, Pakmatsya, Krishnatunda, Gardabhi Klita, Krimisarari,and Utkleshaka.[11]

3. *SAUMYA KITA*

These are thirteen types and aggravate *Kapha* in the body. Their bite gives rise to disease caused by *Kapha.*

Vishvambhara,Panchshukla,Panchkrishna, Kokla,Saireyaka,Prachalaka,Valabha,Kitibha,Suchi mukha,Krishnagodha,Kashayavasika, Gardabhaka and Trotaka.[12]

4. *SANNIPATAKA KITA*

These are twelve types. Bitten by these, stages of poisoning are similar to those of snakes.

- *Tunginasa,Vichilaka,Talaka,Vahaka, Koshthagari,Krimikara,Mandalpucchak,Tundan abha, Sarshapika,Valguli,Shambuka and Agnikita.*
- The site of bite resembles site of burning by caustic alkali.[13]

KANABHA (WASP)

Types- These are four types.

- *Trikanta*
- *Karini*
- *Hastikaksha*
- *Aparajita*

POISINOUS FEATURE

Tairdashtasya Shvayathurangmardo Guruta Gatranam Damshah Krishnashch Bhavati .... (Shu.K.8/27)

These produces severe pain, when bitten by them. There will be swelling body aches, feeling of heaviness of the body and the site of bite will black**.** [14]

TREATMENT

Kushtham Vakram Vacha Patha Vilvammulam Suvarchika
Grihdhoomam Haridre Dve Trikantakvishe Hitah... (Shu.K.8/47)

- All above drugs use together for poison of Trikantaka. [15]

PIPILIKA

TYPES - These are six types.

- *Sthula shirsha*
- *Samvahika*
- *Brahmanika*
- *Angulika*
- *Kapila*
- *Chitravarnas*

POISONOUS FEATURES

Tabhirdashte Damshe Shvyathuragnisprshvddahshophau Bhavatah... (Shu.K.8/34)

- Swelling
- Burning as through tough
- Edema at site of bite. [16]

TREATMENT

Pipeelikabhirdashtanam Makshikamashakaistatha Gomutren Yuto Lepah Krishnavalmikmritika ...(Shu.K.8/55)

- In bite of *pippilika, makshika* and *mashaka* - Application of paste of black mud of ant with *gomutra*. [17]

MAKSHIKA

TYPES- These are six types.

- *Kantarika*
- *Krishna*
- *Pingala*
- *Madhulika*
- *Kashayi*
- *Sthalika*

POISONOUS FEATURE

Tabhirdashtasya Kandushophdahrujo Bhavanti, Sthalikakashayeebhyametdev Shyavpidakotpattirupdravashcha Jvaradayo Bhavanti, Kashayee Sthalika cha Pranhare (Shu.K..8/35)

- Itching
- Swelling
- Burning sensation & pain
- *Sthalika* & *Kashayi*- Blue eruption and causes death. [18]

TREATMENT

Gomutren Yuto Lepah Krishnavalmikmrittika. (Shu.K.8/55)

Application of paste of black mud of ant made by gomutra. [19]

INSECT

Insect body is divided into head, thorax and abdomen. They have 3 pairs of legs and hence sometimes called Hexapoda. One pair of antennae functions as sensory organs. One pair of compound eyes and one to three pairs of ocelli (sometimes absent) may be present. Mouthparts are variously adapted depending on the mode of feeding. Breathing is by tracheal system. Circulatory system is open type. They excrete uric acid through malpighian tubules. Nervous system includes a circumpharyngeal ring and a ventral nerve cord. Sense organs are very well developed. Reproductive capacity is enormous and larval stages grow by moulting (ecdysis). In majority of them larval stage is different from the adult and there is a distinct metamorphosis.[20]

Insect classification

Taxonomy is the study of the principles of scientific classification.

Within the class Hexapoda there are over 750,000 different species of insects.

Classification of Insects [21]

- Kingdom -Animalia
- Invertebrates
- Phylum -Arthropoda
- Exoskeleton
- Jointed leg

Class Insecta Characteristics

Class insecta have different Characteristics feature that mentioned below-

- Head
- Abdomen
- Thorax
- Six legs
- Two pairs of wings
- Two kinds of eyes

-compound

-Simple

- Two Antennae
- Two sets of jaws

All insects begin their life cycle as an egg

Composition of insect venom:

Insect venoms are really complicated. Insect have hugely complex mixture of all sorts of compounds – proteins, peptides, enzymes, and other smaller molecules – go into a small amount of venom. The range of compounds is far too vast to detail every single one – but we can examine some of the major constituents in bee, wasp, hornet and ant venom. When the bee stings, the venom is mixed with water, so the actual composition of the substance it injects into you is around 88% water and 12% venom. From this point onward, we'll consider the percentages of compounds purely in the venom itself. The main toxic component of bee venom, also referred to as apitoxin, is melittin. Melittin is a peptide that comprises around 50-55% of dry venom, and is a compound that can break up cell membranes, resulting in the destruction of cells. However, it's not considered the most harmful component of bee venom; that prize goes to an enzyme that makes up around 10-12%, phospholipase A. This enzyme destroys phospholipids, and also breaks down the membranes of blood cells, resulting in cell destruction; additionally, unlike the majority of larger molecules in the venom, it causes the release of pain-inducing agents. Yet another enzyme, hyaluronidase, aids the action of the venom by catalysing the breakdown of protein-polysaccharide complexes in tissue, allowing the venom to penetrate further into the flesh. Other, smaller molecules can also contribute towards painful effects. A small amount of histamine is found in bee venom; histamine is one of the compounds released by the body during the allergic response, and can cause itchiness and inflammation. The proteins in the sting can cause an allergic reaction, leading to the release of even more histamine, and possible anaphylaxis. MCD peptide, another minor component of the venom, can also cause mast cells in the body to release more histamine, worsening inflammation. The precise composition of wasp and hornet venom isn't as well known as that of bees, but we still have a decent idea of what the major components are. The peptides that are found in the venoms are termed 'wasp kinin' and 'hornet kinin' respectively; these aren't as well characterised as the peptides in bee venom, however like bee venom, they also contain phospholipase, the enzyme hyaluronidase, and histamine. There are, though, some differences in the chemical composition. As well as variations in percentages of the different components, they also contain the compound acetylcholine, not commonly found in bee venoms. Acetylcholine is actually a neurotransmitter that's also produced in our bodies, but in wasp and hornet venom, it helps stimulate pain receptors, heightening the pain felt from the sting and venom. Hornet venoms contain particularly high levels of acetylcholine.[22]

Insect bite Sign and symptoms:

Insect bites and stings occur when an insect is troubled and seeks to defend itself through its natural defence mechanisms. Ant's stings release formic acid, which can cause an immediate skin reaction often resulting in redness and swelling in the injured area. Stings from fire ants, bees, wasps and hornets are usually painful, and may stimulate a dangerous allergic reaction called anaphylaxis for at-risk patients, and some wasps can also have a powerful bite along with a sting. Bites from mosquitoes and fleas are more likely to cause severe itching and swelling. The reaction to a sting is of three types. The normal reaction involves the area around the bite with redness, itchiness, and pain. A large local reaction occurs when the area of swelling is greater than 5 cm. Systemic reactions are when symptoms occur in areas besides that of the bites. With insect stings a large local reaction may occur (an area of skin

redness greater than 10 cm in size). It can last one to two days. It occurs in about 10% of those bitten. [23]

CONCLUSION

According to Ayurveda there are four types of *Keetas* such as *Vayvya, Agneya, Saumya, Sannipatika* these classification based on *Doshas* that cause various types of symptoms according to *dosha* such as *Vayavya keeta* cause *vataj prakop janya vikar, Agneya Keetas* show *Pitta janya vikar, Saumya keetas cause Kapha janya vikar and Sannipatik keetas* cause symptoms of poisoning are similar to snakes. *Sannipatika keeta* aggravates the all *doshas* together. Their site of bite resembles to site of burning by caustic alkali and fire that may appear red, yellow, white and or light red in colour. But, in modern science poisoning of insects (*Keeta*) depends on insect's venom that may be general or specific. Insects are hexapods invertebrate. Insect poisoning are almost same as *keeta visha* that mentioned in Ayurvedic texts.

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