



“A REVIEW ON MAKSHIKA AND PIPILIKA AS A TOOL FOR DIAGNOSIS”

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ABSTRACT

"Smart mother makes often a better diagnosis than a poor doctor" here mother can be pointed to as mother earth where insects dwell in her. If we observe the insects keenly, they provide us with various data about any phenomenon be it on the idea of taste, odor, assuming various disease conditions, etc. Recent advances in research have come up with the concept of the use of entomology as a diagnostic tool. Entomology is a branch of zoology that studies insects and this expertise is applied in various branches of medical sciences as an essential tool in the diagnosis of diseases like Diabetes mellitus, criminal investigation, or death in forensics. Retrospectively, we can see that Ayurveda is one such branch of science that holds vast knowledge where there is mention of such concepts. Our *Acharyas* being a researcher had a keen vision where they have given a glimpse of insects being used in various contexts as a tool for diagnosis. They have mentioned the utility of *Makshika* (fly) on the *Mutra* (urine) signifying the presence of *Madhura Rasa* (sweet taste) suggests the diagnosis of *Prameha*, and also if present around a *Purusha* (human) indicates *Arista* (fatal signs) or *Dusta Vrana* (non-healing ulcer). The usage of *Pipilika* (ants) in dreams also indicates *Arista* (fatal signs). Thus, various examples have been mentioned in *Samhita* that provides us with the idea of using insects in diagnosis. They say "Diagnosis is not the end, but the beginning of practice" with this view, this article has attempted to spotlight the concept of insects being an essential tool for diagnosis.

Keywords: Entomology, insects, tool, *Makshika*, *Pipilika*, *Arista*,

INTRODUCTION

It's been quoted a smart mother makes often a better diagnosis than a poor doctor here we can consider mother as mother earth and we all dwell in her, one such tiny creature is the insect. On a daily basis, we come across these creatures so often for example some blowflies around a cadaver, ants around a spilled sugar syrup, etc but when we observe these keenly, we start developing curiosity, we search for it and come to a conclusion that these insects can provide so much of information, which is nothing but *Anveshana* (research) in Ayurveda

Recent Advances in research are using the expertise of Entomology in medical research. Entomology is nothing but the branch of zoology that deals with the study of insects and their relationship to humans, the environment, and other organisms. Entomologists make great contributions in fields such as agriculture, chemistry, biology, human/animal health, molecular science, forensics, and a variety of other fields of science [1]. Retrospectively, our *Acharyas* being a researcher had a keen vision where they have given a glimpse of various insects being used in various contexts i.e., right from mentioning it to consider ourselves as insects and ants and have a compassionate attitude towards living beings [2] to utilizing it in *Arista Lakshana* (fatal signs) as a tool for diagnosis. So, here we shall take a glimpse of insects like *Makshika* (fly) and *Pipilika* (ant) as a tool for diagnosis.

• AIMS AND OBJECTIVES:

A review of the utilization of insects in contemporary and in our classics.

• MATERIALS AND METHODS:

This article is based on a review of the utilization of insects in various fields or contexts both in the classic and modern areas of medical and forensics fields. Data has been collected from classics, modern literature, and online published works. A possible correlation has been made between how insects were utilized in the present and past as a tool of diagnosis and collected information and have been presented systematically.

• *MAKSHIKA AND PIPILKA*-the tool for diagnosis:

➤ *Makshika*/ fly/ *Diptera*:

According to the advances in research, researchers have developed a technique to measure the insulin levels in fruit flies which is promoting the uses of these for diabetes research. [3] They use a chemical tag to label an insulin-like peptide called *Iip2* in fruit flies which allows researchers to measure insulin concentrations in the insect's blood and cells at the picomolar level i.e., the level at which insulin concentrations are measured in humans. The advantages are they are faster to breed and cheap compared to models of mice, and other mammals which are very laborious and expensive.

Charaka in *Vimana sthana* said that the 3 methods of obtaining knowledge of a *Roga* are *Aptopadesha* (authoritative instruction), *Pratyaksha* (direct observation), and *Anumana* (inference). [4] So, applying this concept, we can infer the utility of *Makshika* (fly) in detecting *Madhura Rasa* (sweet taste) as follows:

<i>Aptopadesha</i>	<i>Pratyaksha</i>	<i>Anumana</i>
<i>Makshikopasarpanena</i> <i>Madhurya</i> [5]	<i>Shareera</i> When we see <i>Makshika</i> being attracted toward a body	<i>Madhura rasa</i> (sweet taste) /Diabetes mellitus

Consequently, they conclude that *Makshika* (the fly), which our *Acharyas* have already highlighted as a

tool, can be used in disease diagnosis in light of recent advances in research.

Also, in forensic entomology back in the 13th century, a criminal investigation had taken place in China as described in Sung Tzu's book called "The washing away of wrongs". In this book, an investigation described that when a farmer was found murdered in a field with a sharp weapon, all the suspects were told to place their sickles on the ground and only one sickle attracted blowflies to the trace amount of blood hidden in the naked eye which resulted in confession by the murderer.^[6] It is said that as death occurs, the body starts decomposing, cells undergo autolysis, and

release a chemical called apeneumones which attract these flies because blowflies can smell decaying flesh from up to 16 km away.^[7] Hence different varieties of flies have been utilized in this area.

Coming back to our roots, we have the concept of *Arista* (fatal signs) where both Charaka and Sushruta have mentioned that we can do *Anumana* (inference) of *Arista* (fatal signs) when we see *Makshika* (fly) or *Neela Makshika* (blue fly) around a person even when he has bathed and applied fragrance.

Aptopadesha	Pratyaksha	Anumana
1. <i>Atyartasikam Kayam Kalapakwasya Makshikah. api Snatanuliptasya bhrshamayanti sarvasah.</i> ^[8]	flies repeatedly surround the body	<i>Arista</i> (fatal signs)
2. <i>Snatanuliptam Yam Chapi Bhajante Neelamakshikah</i> ^[9]	The attraction of blue flies around the person	<i>Arista</i> (fatal signs)

➤ **Pipilika /Ants/Formicidae:**

In a study, 70% of patients checked glycaemic control by tasting urine or passing urine on the ground and observing for ants.^[10] Thus, studies have inferred those ants are helpful in the diagnosis of Diabetes mellitus by detecting diabetic urine. It is because ants use their antennae to check on the chemical composition of food. They prefer sugar to carbs because they are looking for a protein that can best feed their eggs. As is common to them, ants encountering food in their regular hunts carry them back to their colonies to feed the rest of their ilk.^[11]

Having this insight *Acharya* Charaka has mentioned *Pipilika* (ants) in *Purvarupa* (premonitory symptoms) of *Prameha*^[12] and Sushruta mentioned that *Pipilika* (ants) is not attracted to *Pitta Dushita Rakta*^[13] as it lacks *Madhura Rasa* (sweet taste).

According to psychological dream interpretation have said that ant dreams can indicate a disturbed vegetative nervous system or a warning of danger.^[14] Similarly, Sushruta *Sutrasthana's* 29th chapter says that dreaming of *Pipilika* (ants) or *Valmika* (ant hill) is said as *Arista* (fatal signs).^[15]

Aptopadesha	Pratyaksha	Anumana
1. <i>Shadpadh Pipilikabhishcha Shareera mutrabhisaranam</i> ^[12]	ants around urine	<i>Prameha Purvarupa</i> (premonitory symptoms of <i>Prameha</i>)
2. <i>Shyavam Visramanistam Pipilikamakshikanamskandhi Cha Pittadushtam</i> ^[13]	Ants don't attract to the blood	<i>Pitta Dushti Rakta Lakshana</i> (Signs of vitiated <i>Pitta</i> and <i>Rakta</i>)
3. <i>...Valmikam Paribhadrakam</i> ^[15]	Dreaming of anthill	<i>Arista</i> (fatal signs)

CONCLUSION

Entomology is one such emerging branch which is having its vast utility in the medical field such as in research, forensics, etc. But long ago back in centuries, our *Acharyas* being a researcher, as same as an Entomologist have already mentioned not only the above mentioned but many such insects which are of great utility in many aspects like a diagnosis of

Vyadhi (disease), *Arista* (fatal signs), etc; whose applicability has been modified with recent advances in research. They say "Diagnosis is not the end but the beginning of practice" so by using this easily available, and cost-efficient insect as a tool of diagnosis we can fine up our diagnostic skills. Thus, insects are an essential tool for diagnosis.

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