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MANAGEMENT OF *MAKSHIKA DAMSHA* WITH *BILWADI AGADA* – A CASE SERIES

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ABSTRACT

Visha Chikista, a prominent branch of Ayurveda, is gaining recognition in the field of Ayurvedic medicine for its effective treatment protocols in managing toxins and poison-related conditions. This includes various venomous bites from snakes, spiders, scorpions, honey bees, and more. Among these, *makshika damsha* (honey bee sting), categorized as *keetavisha* (insect bites) in Ayurveda, can pose a serious threat with systemic complications if left untreated or if subsequent stings occur. While numerous treatment options, case reports, and research papers on honey bee stings are available, this paper presents a unique case series of three patients treated solely with a single Ayurvedic formulation, *Bilwadi Agada*. The clinical manifestations observed in these cases involved redness, pain, and swelling at the site of the sting. Given that the patients reported immediately after the insect bite, the diagnoses were confirmed as *Makshika damsha*, and *Bilwadi Agada* was administered at specific dose for duration of six days, following meals. Notably, complete healing of the sting site with the restoration of normal

skin was observed at the end of the intervention period. The efficacy of the treatment for honey bee stings using this single formulation has been proven, demonstrating positive responses. In the era of integrative medicine, where different medical systems converge, the successful treatment of such cases using a single, classical, yet effective Ayurvedic formulation instills confidence among Ayurvedic practitioners. It highlights the potential of prescribing Ayurvedic medicines as standalone treatments to effectively serve the well-being of individuals.

Keywords: *Bilwadi Agada*, honey bee bite, *visha cikitsa*, case report, *keeta visha*

INTRODUCTION

Arthropod bites and stings are capable of inflicting injury, allergic reactions and transmitting infectious diseases. Hymenoptera order members are particularly important because of being nearly ubiquitous in the nature. Honeybee stings pose a significant public health risk, and their occurrence is gradually on the rise. The species of bees responsible for human envenomation include Apis mellifera mellifera (A. m. mellifera), A. m. ligustica, and A. m. Scutellata. When the number of stings exceeds 50, it is categorized as massive envenomation. The clinical manifestations of honeybee stings can be classified into localized reactions, allergic reactions, anaphylaxis, and systemic toxic reactions. Systemic reactions occur when a large dose of venom is injected into the body through numerous bee stings. Localized reactions typically involve symptoms such as erythema, swelling, and pain. Allergic reactions, triggered by IgE, can result in hives, swelling, broncho constriction, and even anaphylactic shock. Systemic toxic reactions can lead to serious complications such as acute kidney injury (AKI), acute myocardial infarction (known as Kounis syndrome), stroke, peripheral neuropathy, glomerulonephritis, and in severe cases, death. Mortality rates from honeybee stings have been reported as high as 15–25 percent in various studies. Stroke and multiorgan dysfunction are rare occurrences among these complications. The toxic effects of the venom are attributed to various substances, including phospholipase A2, melittin, peptide 401, histamine, hyaluronidase, and apamine. Among these, melittin has been identified as the most toxic component and is responsible for the majority of severe complications resulting from bee stings. Allergen-specific immunotherapy has been used in the treatment of insect venom stings to prevent severe allergic reactions **[1]**.

According to Ayurveda, honey bee stings are classified as "*keetavisha*" (insect bites). The term "*Keeta*" refers to small creatures that are visible, have two or more legs, and may or may not have wings, with the ability to sting. Charaka describes insects as *keetas* because they are believed

to originate from the waste products like snake's stool and urine. These *keeta* are microscopic insects or worms that may or may not be visible to the naked eye. *Keeta visha* is included in the category of *jangama visha* (poisons of animal origin) **[2]**. According to Acharya Susruta, *keeta* is said to originate from *sarpa* (serpent). Their formation is described as the putrefaction of *"Shukra-Vid-Mutra-Pooti-Und-Sambhava."* Honey bees, known as *Makshika*, are classified into six types based on their colors, shapes, and stings as *Kantaarikaa, Pingala*, *Krishna*, *Madhoolika*, *Kashaayee*, and *Sthaalika* **[3]**. In Ayurvedic classical texts, different types of honey bees are mentioned. However, common symptoms of a bee sting include itching (*kandu*), swelling (*shopha*), burning sensation (*daha*), and pain (*ruja*). Bites from the *Kashaayee* and *Sthaalika* species exhibit these symptoms along with the appearance of blackish eruptions locally. They may also lead to complications such as fever (*jwara*) and other adverse effects. Bites from the *Kashaayee* and *Sthaalika* species are considered more dangerous compared to other species. According to Acharya Charaka, a *makshika* bite causes a burning sensation, fainting, fever, and the formation of blackish-brown pimples with immediate discharge.

Ayurveda encompasses a wide range of medicinal formulations intended for both internal and external use. These formulations cater to various conditions, including acute or chronic cases, poisonous or non-poisonous cases, as well as single or multiple purposes. One such formulation is *Bilwadi Agada*, available in the form of *vati/gutika* (tablet), which possesses qualities that make it highly favourable in clinical practice. It is known for its palatability, extended shelf life, and convenient dosage administration, making it a preferred choice. *Bilwadi Agada* is particularly effective in addressing acute toxico-pathological conditions. References to *Bilwadi Agada* can be found in Ayurvedic texts such as Astanga Sangraha, Astanga Hrudaya, Sahasrayogam, Visha Jotsnika, and Kriya Kaumudi. The indications for *Bilwadi Agada* encompass various conditions, including snake bites (*Bhujanga Visha*), spider venom (*Luta Visha*), rat bites (*Unduru Visha*), scorpion stings (*Vrischika Visha*), food poisoning with pain or cholera (*Visuchika*), indigestion (*Ajirna*), artificial poisons (*Gara Visha*), fever (*Jwara*), and it also possesses antimicrobial and antiviral properties, classified as *Bhutaghna* properties **[4]**.

Although allergic reactions caused by bee stings are widely recognized, it remains concerning that a significant number of these incidents continue to go unreported. Bee stings are a global occurrence, with a history of causing

significant harm to individuals in previous years. While local reactions are more prevalent and typically resolve within a few hours, it is important to note that allergic reactions to venom from stinging insects like bees, yellow jackets, hornets, wasps, or fire ants can pose life-threatening risks **[5]**.

Ayurveda has encountered and effectively treated a diverse range of insect bites, including honey bee stings, over time. Surprisingly, there have been no reported cases treated with specific drugs until now. However, the field of integrative medicine is witnessing a remarkable rise, as various medical systems are joining forces with Ayurveda to enhance healthcare provision. It is noteworthy that classical Ayurvedic texts and formulations have consistently fulfilled the medical requirements in their own unique way. Building upon these observations, this case series highlights three instances of successful management of honey bee stings, diagnosed as "*makshika damsha"* (honey bee sting), through the use of a single drug, *Bilwadi Agada*. By reporting such cases, confidence can be instilled among Ayurvedic practitioners, encouraging them to rely solely on classical formulations despite the availability of other forms of Ayurvedic medicines.

PATIENT INFORMATION:

CASE 1: A 63-year-old female presented to our outpatient department (OPD) with complaints of a burning sensation and pain in the right dorsal wrist and dorsal metacarpophalangeal region, accompanied by intense itching. Upon further inquiry, she disclosed that she had been bitten by a honey bee while tending to her home garden. She experienced severe pain immediately after the bite, which was subsequently followed by itching and a burning sensation around the site of the bite.

CASE 2: A previously healthy 28-year-old male presented to our OPD with the chief complaint of swelling in the lower eyelid of his right eye, accompanied by severe pain and a mild burning sensation. Upon further investigation, he reported being bitten by a honey bee while riding his bike. Additionally, he expressed difficulty in fully opening his right eye since the incident occurred.

CASE 3: A 24-year-old female presented to our OPD with the chief complaints of a burning sensation and stiffness around her left wrist. During the history-taking process, the patient disclosed that she was bitten by a honey bee while searching for old documents at her workplace. Subsequently, she experienced a burning sensation around the site of the bee sting.

CLINICAL FINDINGS:

Inspection:

Colour – pinkish red

Uniformity – irregular shape

Discharge – absent

Blister formation - absent

Hygiene – non pustular

Lesions – non scaly, edematous

Palpation:

Moisture – absent

Temperature – local rise in temperature is present

Texture – normal

Mobility – restricted

Vitals: Vitals of all the patients were stable.

DIAGNOSTIC ASSESSMENT:

The diagnosis was established based on careful consideration of the patient's complaints, medical history, and physical examination. Given that all the patients sought immediate medical attention following a honey bee sting, there was limited room for exploring differential diagnoses or considering alternative possibilities. As a result, the cases were directly diagnosed as *makshika damsh*. Furthermore, according to classical principles, *keeta visha* is regarded as a *sadhya vyadhi*, indicating that it is a treatable condition.

TREATMENT GIVEN:

Conservative treatment was administered to all three cases, focusing solely on the use of *Bilwadi Agada* tablets from Vadiyaratnam Oushadhashala Pvt. Ltd. The treatment timeline is outlined in **Table 1**, providing a comprehensive overview of the therapeutic approach employed. Dose details of *Bilwadi Agada* administered are furnished in **Table 2**.

Table 1: Timeline of the case series

Case no	Visit to OPD	Intervention started	Follow up	Intervention ended	Duration
1	03.10.21	04.06.21	09.06.21	09.06.21	06 days
2	17.02.22	18.02.22	23.02.22	23.02.22	06 days
3	21.06.22	22.06.22	27.06.22	27.06.22	06 days

Table 2: Dose details of *Bilwadi Agada*

Duration	Dosage	*Anupana*
1st, 2nd , 3rd day	1 tablet thrice daily after food	Warm water
4th, 5th , 6th day	1 tablet twice daily after food	Warm water

OUTCOME AND FOLLOW UP

After six days of receiving *Bilwadi Agada* intervention, all patients returned for follow-up. Remarkably, the symptoms had completely subsided, leaving no visible scar marks. Importantly, no adverse reactions were observed throughout the entire treatment period for any of the patients. The before and after treatment pictures of all the cases are given as **images 1 to 6**.

Image 01: Case 01 before treatment

Image 02: Case 01 after treatment

Image 02: Case 02 before treatment

Image 04: Case 02 after treatment

Image 05: Case 03 before treatment

Image 06: Case 03 after treatment

DISCUSSION

The chief complaints presented by all the cases primarily exhibited symptoms related to *pitta* and *vata doshas*, characterized by noticeable swelling, redness, and pain. These symptoms showed a progressive increase in severity, as described in the verse pertaining to swelling and pain **[6]**. Therefore, a treatment approach that could effectively pacify both *vata* and *pitta doshas* was required for all the cases.

Bilwadi Agada comprises ingredients primarily possessing *katu* (pungent), *tikta* (bitter), and *kashaya* (astringent) tastes. These properties contribute to its therapeutic effects. Nearly

all the components of the formulation possess *dipana* (digestive), *pachana* (carminative), and *jwarahara* (antipyretic) properties. The formulation aims to restore the proper functioning of *agni* (digestive fire) in order to facilitate optimal metabolism and facilitate healing at the site of the sting.

The analysis of the properties of *Bilwadi Agada* reveals that 85.71% of the constituents possess the *ushna* (warm) *virya*, with 68.28% exhibiting *vataghna* (alleviating *vata*) properties, and 78.57% displaying *kaphaghna* (balancing *kapha*) effects. This distribution suggests that *Bilwadi Agada* has the potential to provide relief from various types of pain and swelling resulting from insect bites **[7]**.

Bilwadi Agada is believed to exert its effects through inhibiting the synthesis of prostaglandins and exhibits potential anti-inflammatory properties. It may also suppress the activity of CYP450 enzymes, which play a crucial role in the production of toxic metabolites such as NAPQI **[8]**. The root of A. marmelos (*bilva*) exhibited significant acute anti-inflammatory activity, which was attributed to the inhibition of mediator release, including histamine, serotonin, and prostaglandins. This effect is believed to be mediated by the presence of chemical constituents such as marmin, lupeol, and others **[9]**. It is speculated that the fixed oil derived from O. sanctum (holy basil) has the potential to inhibit both the cyclooxygenase and lipoxygenase pathways involved in arachidonic acid metabolism. This dual inhibitory property may be complemented by the antihistaminic effects of the fixed oil **[10]**. Karanjin and pongamol, which are exclusive furano-flavonoids found in the seeds of *karanja*, have demonstrated anti-inflammatory properties in previous animal models. These unique compounds exhibit potential as agents with anti-inflammatory effects **[11]**. Cyperus rotundus *(musta)* may act by inhibiting the production or release of pro-inflammatory mediators such as cytokines, chemokines, and prostaglandins. These mediators are involved in the inflammatory response and can contribute to skin inflammation **[12]**. *Triphala* exhibits dual effects of anti-inflammatory and antinociceptive activities. The anti-inflammatory effect is likely achieved through the inhibition of the cyclooxygenase pathway without exerting steroidal-like action. On the other hand, the antinociceptive activity of the *Triphala* may involve both peripheral and partial central mechanisms **[13]**. The efficacy of Cow Urine as antioxidants can be attributed to their ability to scavenge superoxide anions, inhibit nitrite formation, remove hydroxyl radicals, and exhibit reducing ability. This robust antioxidant activity could be attributed to the presence of volatile fatty acids identified through GC-MS analysis in

an invitro study. The inhibition of edema by cow's urine may be attributed to the suppression of histamine H1 receptor and histidine decarboxylase gene transcriptions. Moreover, the mechanism could also include the inhibition of inflammatory enzymes (iNOS and COX-2) and their products (NO and PGE2) **[14]**. Likewise, each of the constituent drugs in *Bilwadi Agada* contributes to its multifaceted properties, including anti-inflammatory, antioxidant, immunomodulatory, and detoxifying effects.

With the powerful formulation of *Bilwadi Agada*, abundant in phytoconstituents, a single treatment proved effective in managing the condition. The diverse active ingredients in the formulation worked synergistically to address multiple functions within the body, facilitating a prompt resolution of the condition without any adverse reactions. This comprehensive approach likely contributed to the timely and successful recovery.

CONCLUSION

The administration of *Bilwadi Agada*, a single drug, proved highly effective in treating honey bee stings in all three cases. Patients experienced rapid relief and complete resolution of symptoms within a short period of time. The treatment approach adopted successfully halted the progression of the condition and led to the complete resolution of associated signs and symptoms. This case series serves as an exemplar for practitioners, highlighting the potential of classical Ayurvedic formulations as standalone treatments after a comprehensive understanding of both the specific ailment and the formulation itself.

PATIENT CONSENT: The patient provided oral informed consent for the publication of this case series along with the accompanying images.

CONFLICTS OF INTEREST: No conflicts of interest.

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