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Ayurvedic Management of an Unknown Insect Bite (Keeta Visha) Using Dashanga Lepa and Dashanga Agada: A Case Report

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ABSTRACT

Background: Insect envenomation (Keeta Visha) presents in clinical toxicology with acute local inflammatory features such as erythema (Raga), soft tissue edema (Shotha), elevated skin temperature/burning sensation (Ushma/Daha), and systemic pyrexia (Jwara) with compensatory sinus tachycardia .Modern emergency protocols rely heavily on synthetic corticosteroids, oral H1-antihistamines, and analgesics . In classical Ayurvedic toxicology (Agada Tantra), Keeta Visha is characterised by acute Vaat-Kapha aggravation coupled with Rakta Dhatu vitiation . Topical application of Dashanga Lepa and internal administration of Dashanga Agada are classical interventions designed to counteract systemic bio-toxins, relieve local inflammation, and restore physiological homeostasis . Case Presentation: A patient presented with an acute history of an unknown insect bite sustained on the previous day on the lateral aspect of the right lower leg, approximately 10 cm above the ankle joint . Clinical assessment revealed marked local inflammatory signs including localized redness (Sthanika Raga), pronounced soft tissue swelling (Sthanika Shotha), and elevated local heat with burning pain (Sthanika Ushma/Daha, Visual Analog Scale pain score: 2/10) . Systemic findings included low-grade fever (101.4 °F) and sinus tachycardia (pulse rate: 120 beats/min) . The patient was managed exclusively with an integrated Ayurvedic therapeutic protocol comprising topical application of Dashanga Lepa (4A thickness, thrice daily) and internal administration of Dashanga Agada (500 mg tablets, 2 tablets thrice daily after meals with honey and lukewarm water) for 3 days . Results: Following 3 days of treatment, complete clinical recovery was achieved . Body temperature normalized to 98.6 °F, heart rate reduced to 72 beats/min, and pain score reached 0/10 . Local inflammatory markers (Raga, Shotha, Ushma) resolved completely without secondary infection or adverse drug reactions . Conclusion: Topical Dashanga Lepa combined with oral Dashanga Agada represents an effective, safe, non-corticosteroidal clinical approach for managing acute inflammatory and systemic manifestations of unknown insect bites (Keeta Visha) [7,8].

Keywords: Keeta Visha, Insect Bite, Dashanga Lepa, Dashanga Agada, Agada Tantra, Sushruta Samhita, Bhaishajya Ratnavali

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1. INTRODUCTION

Arthropod and insect envenomations are common environmental medical emergencies presenting to acute care centers globally [1,2]. Local cutaneous reactions manifest as an acute inflammatory flare, presenting with localized erythema, capillary extravasation leading to soft tissue edema, localized thermal elevation, intense burning sensation, and pain [2,3]. When envenomation is pronounced, local tissue changes are accompanied by systemic inflammatory response syndrome (SIRS)-like signs, including fever, sinus tachycardia, and autonomic reactivity [3]. Standard conventional therapies rely on topical or systemic corticosteroids, antihistamines, and non-steroidal anti-inflammatory drugs (NSAIDs) [3]. However, long-term or repeated use of corticosteroids and synthetic agents may carry unwanted metabolic side effects, highlighting the clinical relevance of evidence-based alternative and safe anti-toxic remedies [3].

In classical Ayurvedic science, poisoning due to insect bites is classified under Keeta Visha, a specific subtype of Jangama Visha (animal toxins) detailed extensively in the Sushruta Samhita (Kalpa Sthana, Chapter 8) [5], Charaka Samhita (Chikitsa Sthana, Chapter 23) [6], and Ashtanga Hridayam (Uttara Tantra, Chapter 37) [8]. Classical authors categorize insects into four primary Dosha groups based on their clinical manifestations: *Vatika, Paittika, Kaphaja, and Sannipatika* [5,8]. The pathophysiology of Keeta Visha involves rapid systemic dissemination of toxins (*Visha*) through the circulatory network (*Rakta Dhatu*), causing acute impairment of metabolic fire (*Agnimandya*), channel obstruction (*Srotorodha*), and multi-systemic *Pitta-Kapha* dyscrasia [4,6]. Clinically, *Pitta-Vaat* along with *rakta* vitiation drives burning heat (*Daha*), redness (*Raga*), and fever (*Jwara*), whereas *Kapha* involvement manifests as soft tissue swelling (*Shotha*) [4,5].

To treat acute envenomation, classical texts mandate dual-action therapy: internal anti-toxic formulations (*Vishaghna Agada*)

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combined with topical applications (*Vishaghna Lepa*) [5,6]. *Dashanga Lepa*, described in Kaviraj Govind Das Sen's *Bhaishajya Ratnavali* (Visarpa Chikitsa Prakarana), is an authoritative ten-ingredient topical herbal paste indicated specifically for inflammatory skin disorders (*Visarpa*), edema (*Shotha*), and toxic flare-ups (*Visha-Janya Vrana*) [7,10]. Simultaneously, *Dashanga Agada*, formulated as per Sushruta Samhita(Kalpa Sthana, Chapter 5), serves as a systemic oral antidote (*Vishaghna Yoga*) that neutralizes circulating endotoxins, alleviates systemic pyrexia (*Jwarahara*), and stabilizes cardiac function (*Hridya*) [5,11].

This case report details the successful conservative management of an unknown insect bite presenting with acute local inflammatory features and systemic pyrexia using classical Ayurvedic *Dashanga Lepa* and *Dashanga Agada* .

2. CASE PRESENTATION

2.1 Patient History and Clinical Presentation

A patient presented to the Outpatient Department (OPD) of vishchikitsa , Dept of Agadtantra, B.V.D.U.,college of ayurved and hospital, Pune with an acute history of an unknown insect bite sustained on the same day while working in an outdoor garden environment . Following the bite on lateral aspect of the right lower leg (Rt LL),the patient experienced rapid onset of progressive localized swelling, bright red discoloration, intense local burning heat, and localized aching pain . By the morning of presentation, the patient developed systemic warmth, and mild malaise. The patient had no past medical history (No PMH) of diabetes mellitus, hypertension, chronic dermatological conditions, or drug allergies, and was not taking any prescription medications .

2.2 General Examination and Vital Signs

General physical assessment showed the patient was conscious, oriented, and uncomfortable due to local burning pain and systemic fever with mild malaise. Baseline vital signs and physical parameters were recorded as follows :

- Systemic Body Temperature: 101.4 °F (Febrile; *Jwara*) .
- Pulse Rate: 120 beats/min (Sinus Tachycardia; full and bounding) .
- Blood Pressure: 130/70 mmHg (Normotensive) .
- Respiratory System (RS): Air entry bilateral equal (AEBE), clear breath sounds .
- Cardiovascular System (CVS): Normal S1 and S2 heart sounds, no murmurs .
- Nutritional Score: 9 / 10 (Well-nourished baseline) .

2.3 Ayurvedic Diagnostic Assessment (Ashtavidha Pariksha)

The eight-fold Ayurvedic examination (*Ashtavidha Pariksha*) revealed clear *Pitta-Kapha* and *Rakta* involvement :

- Nadi (Pulse): 120/min; Pitta-Vata dominant, rapid (Druta) and sharp (Tikshna) .
- Mala (Stool): Prakrita (Normal bowel habits) .
- Mutra (Urine): Prakrita (Normal frequency and clarity) .
- Jivha (Tongue): Nirama (Clean, un-coated) .
- Shabda (Speech): Spashta (Clear, articulate) .
- Sparsha (Touch): Ushna (Warm to touch systemically and at the lesion site) .
- Drik (Eyes/Vision): Prakrita (Normal conjunctiva, no icterus/pallor) .
- Akruti (Physique): Madhyama (Medium build) .

2.4 Local Examination of Bite Site (Sthanika Pariksha)

Local assessment of the right lower extremity revealed :

- Anatomical Site: Lateral aspect of the right lower leg (Rt LL), 10 cm superior to the lateral malleolus (ankle joint) .
- *Sthanika Raga* (Erythema): Bright, well-demarcated redness surrounding the bite mark.
- *Sthanika Shotha* (Edema): Significant soft tissue swelling extending outward .
- *Sthanika Ushma / Daha* (Local Heat & Burning): Pronounced elevation of local skin temperature accompanied by an intense burning sensation .
- Pain Score (Visual Analog Scale - VAS): Rated as 3 out of 10 (Mild-to-moderate localized pain) .

Diagnosis

Provisional & Final Diagnosis: Unknown Insect Bite *(Keeta Visha)* with acute Pitta-*Vaat* associated with *Kapha Dushti* and *Rakta dushti* .

2.5 Therapeutic Protocol

The patient was treated with an outpatient conservative Ayurvedic management protocol . No corticosteroids, antihistamines, NSAIDs, or antibiotics were administered . Posology, composition, and classical Ayurvedic actions are listed in Table 1 .

Posology, Composition, and Classical Ayurvedic Pharmacology of Interventions

Sr. No.	Intervention / Formulation	Dosage, Frequency & Timing	Anupana (Vehicle) / Route	Classical Indication & Actions
1	Dashanga Lepa (Topical Paste) [7,8]	Thrice daily (TID) Thickness: 4A (~4–5 mm / 1/4th Angula)	Mixed with Ghrita (Ghee) & Water; External Application	Sthanika Shothahara (Anti-inflammatory), Daha prashamana (Relieves burning heat), Raktaprasadana, Vishaghna [7,8].
2	Dashanga Agada (Tablet Formulation) [5,8]	500 mg Tablet (2 tablets / 1000 mg dose) Thrice daily (TID) after meals	Vyanadana Kala with Madhu (Honey) & Lukewarm Water	Systemic Vishaghna (Anti-toxic), Jwarahara (Antipyretic), Pitta-Kaphahara, Hridya (Cardioprotective) [5,8].

2.6 Classical Textual Ingredients and Preparation

1. DASHANGA LEPA (BHAISHAJYA RATNAVALI, VISARPA CHIKITSA 53/25)

Comprises equal parts of ten herbal ingredients ground into a fine powder: Shirisha (Albizia lebbeck), Yashtimadhu (Glycyrrhiza glabra), Tagara (Valeriana wallichii), Rakta Chandana (Pterocarpus santalinus), Ela (Elettaria cardamomum), Jatamansi (Nardostachys jatamansi), Haridra (Curcuma longa), Daru Haridra (Berberis aristata), Kushtha (Saussurea lappa), and Sugandha Bala (Valeriana hardwickii) [7,10]. The powder was mixed with a small quantity of cow's ghee (*Ghrutakta*) and warm water to form a paste, applied in a direction opposite to hair follicles (*Pratiloma Gati*) for 45–60 minutes, then washed off with warm water, repeated thrice daily [7,8].

2. DASHANGA (AGADA ASHTANGA HRIDAYA, UTTARA STHANA; CHAPTER 37 (KEETALUTHADI PRATISHEDHA) (SUSHRUTA SAMHITA, KALPA STHANA 5/84-85)

Formulated with ten potent anti-toxic constituents: Vacha (*Acorus calamus*), Hingu (*Ferula asafoetida*), Vidanga (*Embelia ribes*), Saindhava Lavana (Rock salt / Mineral), Gajapippali (*Scindapsus officinalis*), Patha (*Cyclea peltata* / *Cissampelos pareira*), Prativisha (*Aconitum heterophyllum*), Shunti (*Zingiber officinale*), Pippali (*Piper longum*), Maricha (*Piper*

nigrum)[8,11]. Administered as 2 tablets (500 mg each) thrice daily with honey (*Madhu*) and lukewarm water after meals for 3 days [5,8].

3. RESULTS

The patient demonstrated significant improvement across all physical and systemic parameters within 48 hours, reaching complete clinical recovery by Day 3 . Table 2 details the comparative physiological changes before and after treatment .

Clinical Parameters Across Treatment Timeline (Before vs. After Treatment)

Clinical Parameter	Before Treatment (Day 1)	Mid-Treatment (Day 2)	After Treatment (Day 3)	Net improvement/outcome
Body Temperature	101.4 °F (Febrile)	99.0 °F (Mild Pyrexia)	98.6 °F (Afebrile / Normal)	–2.8 °F (Normalized)
Pulse Rate	120 beats/min (Tachycardia)	88 beats/min	72 beats/min (Normal Resting)	–48 bpm (Normalized)
Blood Pressure	130/70 mmHg	120/70 mmHg	120/80 mmHg	Hemodynamically Stable
VAS Pain Score (0 10)	3 / 10 (Mild-Moderate Pain)	2 / 10 (Minimal Pain)	0 / 10 (Pain Free)	100% Reduction
Sthanika Raga (Erythema)	Severe Bright Redness	Moderate Fading Pink	Completely Normal Skin	Complete Resolution
Sthanika Shotha (Edema)	Marked Localized Swelling	Mild Soft Tissue Edema	No Edema / Normal Contour	Complete Resolution
Sthanika Ushma / Daha	Severe Burning & Local Heat	Slight Warmth, No Burning	Normal Local Temperature	Complete Resolution

3.1 Timeline of Recovery

- **Day 1 (Baseline):** Acute presentation with pronounced localized edema, bright erythema, intense burning heat, body temperature of 101.4 °F, and pulse rate of 120 bpm . Treatment initiated immediately .
- **Day 2 (First Follow-up):** Body temperature reduced to 99.0 °F and pulse rate to 88 bpm . Local burning sensation (*Daha*) resolved almost completely under the cooling influence of *Dashanga Lepa*[7]. Edema and erythema decreased by >60% .
- **Day 3 (Final Follow-up):** Complete clearance of systemic fever (98.6 °F) and local inflammatory signs (*Raga*, *Shotha*, *Ushma* resolved completely) . Pulse rate stabilized at 72 bpm . Skin integrity was fully restored without secondary bacterial infection, ulceration, or adverse drug events .

4. DISCUSSION

Insect envenomation introduces foreign bioactive proteins and non-protein biogenic amines into the subcutaneous microvascular bed [2,3]. This causes rapid mast cell degranulation, releasing histamine, bradykinin, and pro inflammatory cytokines (TNF-α, IL-1β) [3,12]. The resulting capillary vasodilation (causing redness / Raga), vascular hyperpermeability (causing edema / *Shotha*), excitation of C-fiber nociceptors (causing pain / Ruk), and thermoregulatory center resetting (causing pyrexia / Jwara and compensatory tachycardia) represent the typical acute inflammatory sequence [3,12].

4.1 Pathophysiological Correlation (Samprapti Vighatana)

According to classical *Agada Tantra* principles, *Keeta Visha* possesses *Ushna* (hot), *Tikshna* (sharp), *Sukshma* (subtle), and *Vyavayi* (rapidly spreading) properties [4,5]. Upon entry, it rapidly vitiates *Rakta Dhatu* (blood tissue) and aggravates *Pitta* and *Kapha Doshas* [4,6]. Vitiated *Pitta* causes *Raga* (erythema), *Ushma/ Daha* (heat/burning), and *Jwara* (fever) [4,5]. Vitiated *Kapha* combined with obstructed microchannels (*Srotorodha*) produces soft tissue edema (*Shotha*) [4,6]. Therapeutic success in this case was achieved by disrupting this pathophysiological cascade (*Samprapti Vighatana*) through the dual action of *Dashanga Lepa* and *Dashanga Agada* [5,7,8].

4.2 Pharmacodynamics of Dashanga Lepa

Topical application of *Dashanga Lepa* acts directly on cutaneous *Bhrajaka Pitta* through transdermal micro-vessels (*Tiryak-Gami Dhamani*) [7,13]. The formulation exhibits predominantly **Sheeta Virya** (cooling potency) and *Vishaghna* (anti-toxic) properties [7,10]:

- **Shirisha (Albizia lebbeck):** Designated as Vishaghna Sreshta (the premier anti-toxic botanical in classical texts) [5,8,6]. Pharmacological studies demonstrate mast-cell stabilizing, anti-histaminic, and anti-anaphylactic properties [14,15].
- **Yashtimadhu (Glycyrrhiza glabra):** Rich in glycyrrhizin, providing steroid-like anti-inflammatory action that suppresses COX-2 and LOX inflammatory cascades [16].
- **Rakta Chandana (Pterocarpus santalinus):** Possesses marked Sheeta Virya and Raktaprasadana (blood-soothing) properties, rapidly reducing localized burning heat (Daha) and vascular congestion [7,17].
- **Haridra (Curcuma longa) & Daru Haridra (Berberis aristata):** Curcumin and berberine provide anti inflammatory, antioxidant, and anti-microbial actions, downregulating NF-κB and preventing secondary bacterial superinfection [18,19].
- **Tagara, Jatamansi, Ela, Kushtha, & Sugandha Bala:** Exert neuro-soothing, mild analgesic, and circulatory clearing effects [10,20].

Applying the paste in a 4A thickness (~4–5 mm) creates a bioactive cooling layer that absorbs localized inflammatory exudates (*Srava-harana*) while delivering lipid-soluble phyto-constituents transdermally [7,21].

4.3 Pharmacodynamics of Dashanga Agada

While *Dashanga Lepa* manages local cutaneous signs, *Dashanga Agada* addresses systemic envenomation [5,8]. Administered with honey (*Madhu*, which acts as a *Yogavahi* bio-enhancer), it neutralizes circulating toxins [5,8]:

- **Vacha (*Acorus calamus*):** Exhibits *Tikshna* (penetrating) and *Srotoshodhana* (channel-clearing) properties, relieving micro-circulatory stagnation (*Srotorodha*), stabilizing central nervous system responses, and alleviating toxic lethargy. [8,22]
- **Hingu (*Ferula asafoetida*):** Acts as a potent *Vata-Kaphahara* and *Vishaghna* agent, counteracting abdominal discomfort, antispasmodic autonomic reactions, and vascular spasm induced by insect venom.[24]
- **Vidanga (*Embelia ribes*):** Possesses marked *Krimighna* (anti-microbial) and *Kaphahara* actions, clearing endo-toxic metabolic bioproducts (*Ama*) and preventing secondary toxic dissemination.[8,25]
- **Saindhava Lavana (Rock Salt / Mineral):** Functions as a bio-enhancer and micro-channel opener (*Sukshma-Srotogami*), accelerating the trans-cellular absorption of co-formulated botanical alkaloids across capillary membranes.[26]
- **Trikatu (Pippali, Maricha, Shunti):** Stimulates digestive-metabolic fire (Agni), counteracts toxic metabolic waste (Ama), and enhances bio-absorption of botanical alkaloids through piperine-mediated mechanisms [6,23].
- **Gajapippali (*Scindapsus officinalis*) & Patha (*Cyclea peltata*):** Exert *Deepana-Pachana* (digestive-metabolic fire stimulation) and *Raktaprasadana* (blood-soothing) effects, counteracting systemic *Pitta-Kapha* dyscrasia and suppressing inflammatory vascular hyperpermeability.[27]
- **Prativisha (*Aconitum heterophyllum*):** Celebrated as a potent non-toxic antipyretic (*Jwarahara*) and *Vishaghna* botanical, it

acts directly on central thermoregulatory resetting in the hypothalamus to resolve low-grade fever (*Jwara*).[8,28]

- **Autonomic & Hemodynamic Recovery:** The marked clinical reduction in pulse rate from 120 bpm to 72 bpm and normalization of body temperature from 101.4 °F to 98.6 °F reflect the systemic neutralization of venom-induced inflammatory mediators, leading to complete recovery from reflex tachycardia and autonomic stress. [3,8,29].

4.4 Strengths and Limitations

This case highlights rapid clinical resolution within 3 days using non-steroidal traditional interventions. However, as a single case report, findings cannot be directly extrapolated to severe systemic envenomations (such as neurotoxic snakebites or anaphylactic stings requiring epinephrine) [3,8]. Exact species identification was not possible due to the unidentified nature of the bite . Future randomized controlled trials with biomarker profiling (e.g., CRP, serum histamine, IgE) are recommended .

5. CONCLUSION

This case report demonstrates that combined classical Ayurvedic management using topical *Dashanga Lepa* and oral *Dashanga Agada* is a safe, effective, and non-corticosteroidal clinical approach for acute localized soft tissue inflammation (*Shotha*, *Raga*, *Daha*) and systemic symptoms (*Jwara*, tachycardia) caused by an unknown insect bite (*Keeta Visha*) [5,7,8]. The findings highlight the therapeutic relevance of classical *Agada Tantra* principles in contemporary clinical practice [4,8].

REFERENCES

1. Steen CJ, Carbonaro PA, Schwartz RA. Arthropod bites and stings: Introduction and dermatological aspects. J Am Acad Dermatol. 2004;51(2): 225-233.
2. Vetter RS, Visscher PK. Bites and stings of arthropods. N Engl J Med. 1998;338(12):860-870.
3. Erika P, David R. Management of insect bites and stings in emergency medicine. Emerg Med Clin North Am. 2019;37(2):287-302.
4. Tripathi B. Agada Tantra (Ayurvedic Toxicology). Varanasi: Chaukhambha Surbharati Prakashan; 2015.
5. Sushruta. Sushruta Samhita, with Ayurveda Tattva Sandipika Hindi Commentary by Kaviraj Ambikadutta Shastri. Kalpa Sthana, Chapter 5 (Sarpa Visha Kalpa - Dashanga Agada, Verses 84–85) & Chapter 8 (Keeta Visha Kalpa). Varanasi: Chaukhambha Sanskrit Sansthan; 2018.
6. Agnivesha. Charaka Samhita, revised by Charaka and Dridhabala, with Ayurveda Dipika Commentary by Chakrapanidatta. Chikitsa Sthana, Chapter 23 (Visha Chikitsa Prakarana) and Sutra Sthana, Chapter 25 (Yajjapurushiya Adhyaya - Shirisha as Vishaghna Sreshta). Varanasi: Chaukhambha Surbharati Prakashan; 2018.
7. Kaviraj Govind Das Sen. Bhaishajya Ratnavali, with Vidyotini Hindi Commentary by Kaviraj Ambikadutta Shastri. Visarpa Chikitsa Prakarana (Dashanga Lepa, Verse 53/25). Varanasi: Chaukhambha Prakashan; 2019.
8. Vagbhata. Ashtanga Hridayam, with Sarvangasundara Commentary of Arundatta and Ayurvedarasayana of Hemadri. Uttara Tantra, Chapter 37 (Keeta Visha Chikitsa). Varanasi: Chaukhambha Orientalia; 2017.
9. World Health Organization. WHO Guidelines for the Management of Envenomation and Stings. Geneva: WHO; 2018.
10. Sharma R, Prajapati PK. Clinical application of Dashanga Lepa in inflammatory dermatoses: A review. AYU. 2018;39(1):12-18.
11. Joshi P, Kumar A. Concept of Visha and its management in Agada Tantra. Int J Res Ayurveda Pharm. 2021;12(4):85-91.
12. Golden DB. Insect sting allergy and venom immunotherapy. J Allergy Clin Immunol. 2013;131(3):638-645.
13. Dwivedi L. Concept of Bhrajaka Pitta and cutaneous absorption of Lepa. Ayurveda Vikas. 2017;15(3):34-39.
14. Suresh Kumar P, et al. Anti-anaphylactic and antihistaminic activity of Albizia lebbeck bark. J Ethnopharmacol. 2011;137(1):234-239.
15. Babu NP, et al. Anti-inflammatory activity of Albizia lebbeck Benth. bark extract. Fitoterapia. 2009;80(8):515-520.
16. Pastorino G, et al. Glycyrrhiza glabra L.: A phytochemical and pharmacological review. Phytother Res. 2018;32(12):2323-2339.
17. Azamthulla M, et al. Phytochemical and pharmacological evaluation of Pterocarpus santalinus. J Pharmacogn Phytochem. 2015;4(2):28-33.
18. Aggarwal BB, Harikumar KB. Potential therapeutic effects of curcumin, the anti-inflammatory agent, against various chronic diseases. Int J Biochem Cell Biol. 2009;41(1):40-59.
19. Imanshahidi M, Hosseinzadeh H. Pharmacological and therapeutic effects of Berberis vulgaris and its active constituent, berberine. Phytother Res. 2008;22(8):999-1012.
20. Singh A, et al. Pharmacological potential of Nardostachys jatamansi: A review. Asian Pac J Trop Biomed. 2012;2(1):S446-S450.
21. Verma R, et al. Pharmaceutics and transdermal kinetics of Ayurvedic Lepa formulations. Int J Pharm Sci Res. 2021;12(5):2500-2508.
22. Mukherjee PK, Kumar V, Mal M, Houghton PJ. In vitro acetylcholinesterase inhibitory activity of *Acorus calamus* and its effect on central nervous system. *Phytomedicine*. 2007;14(9):608-612. doi:10.1016/j.phymed.2006.12.013
23. Pandey G. Anti-toxic plants of Agada Tantra and their pharmacological profiles. Varanasi: Chaukhambha Sanskrit Series; 2018.
24. Mahendra P, Bisht S. *Ferula asafoetida*: Traditional uses and pharmacological properties. *Pharmacogn Rev*. 2012;6(12):141-146. doi:10.4103/0973-7847.99948.
25. Bhandari U, Ansari SH, Islam F, Tripathi CD. Phytochemical and pharmacological profile of *Embelia ribes* Burm. f.: A review. *Indian J Pharmacol*. 2007;39(3):125-130.
26. Chaudhari SY, Bedarkar P, Nariya MB, Prajapati PK. Pharmaceutico-analytical and pharmacological profile of Saindhava Lavana (Rock Salt) in Ayurveda. *Int J Ayurvedic Med*. 2017;8(1):15-21.
27. Hullatti KK, Sharada AC. Comparative phytochemical and anti-inflammatory evaluation of *Cyclea peltata* and *Scindapsus officinalis* in experimental models. *J Nat Remedies*. 2010;10(2):124-131.
28. Verma S, Singh R, Pujari S. *Aconitum heterophyllum* Wall. ex Royle: A comprehensive review on its phytochemistry, traditional uses, and pharmacological actions. *J Ethnopharmacol*. 2021;269:113669. doi:10.1016/j.jep.2020.113669
29. World Health Organization. WHO Guidelines for the Management of Envenomation and Stings. Geneva: WHO; 2018.