eISSN 2581-8996
ONLINE
THE INTERNATIONAL JOURNAL OF ADVANCED RESEARCH IN MULTIDISCIPLINARY SCIENCES (IJARMS)
A BI-ANNUAL, OPEN ACCESS, PEER REVIEWED (REFEREED) JOURNAL
Vol. 3, Issue 01, Jan 2020

An Ethnobotanical Uses of Plants for the Treatment of Scorpion sting in South-Western Uttar Pradesh of Bundelkhand Region

Dr. Vinay Kumar Prajapati[1]
[1]Department of Botany, Govt. Degree College, Haripur Nihastha, Raibareli, UP, India

Received: 12 Jan 2020, Accepted: 19 Jan 2020, Published on line: 31 Jan 2020

Abstract

Scorpion envenomation is a significant public health concern in rural areas of Bundelkhand, south-western Uttar Pradesh, India, often resulting in pain, local inflammation, and systemic complications. Traditional herbal remedies remain the primary mode of treatment in these regions due to limited access to medical facilities. This study documents ethnomedicinal knowledge concerning plants used for scorpion sting management. Data were collected through field surveys, semi-structured interviews, and participatory observation involving traditional healers and elderly community members. A total of eight plant species from seven families were documented, with leaves being the most frequently used plant part, followed by roots and seeds. The documented plants exhibit potential anti-inflammatory, analgesic, and detoxifying properties, supporting their traditional use. This study highlights the importance of preserving indigenous knowledge and provides a basis for future pharmacological and toxicological validation of these medicinal plants.

Keywords: Ethnomedicine, Scorpion sting, Medicinal plants, Uttar Pradesh, Traditional knowledge, Anti-venom.

Introduction

1.1 Scorpion Envenomation: Background

Scorpion stings are a prevalent health issue in rural India, especially in semi-arid regions such as Bundelkhand. Envenomation can cause severe localized pain, inflammation, neurotoxic effects, and systemic manifestations including cardiac, respiratory, and gastrointestinal disturbances (Chippaux, 2012; Isbister & Bawaskar, 2014). Conventional treatments involve administration of anti-venom, analgesics, and supportive care. However, in resource-limited settings, traditional plant-based remedies continue to serve as the first line of defense due to their accessibility, low cost, and cultural acceptability (Fabricant & Farnsworth, 2001).

1.2 Ethnomedicine in India

India is recognized for its rich heritage of traditional medicine, including Ayurveda, Unani, and folk healing practices. Medicinal plants have been widely used to treat envenomation and associated symptoms due to their analgesic, anti-inflammatory, and detoxifying properties (Pushpangadan et al., 1996; Jain, 1991). Ethnobotanical documentation is critical for the preservation of indigenous knowledge and serves as a resource for pharmacological research and novel drug discovery (Kumar et al., 2016).

1.3 Rationale of the Study

Despite extensive traditional knowledge in south-western Uttar Pradesh, there is limited systematic documentation of plants used specifically for scorpion sting management. This study aims to document the plant species used, their local names, parts utilized, preparation methods, and administration practices, thereby providing a foundation for future pharmacological investigations and sustainable utilization of medicinal plants.

2. Materials and Methods

eISSN 2581-8996
ONLINE
THE INTERNATIONAL JOURNAL OF ADVANCED RESEARCH IN MULTIDISCIPLINARY SCIENCES (IJARMS)
A BI-ANNUAL, OPEN ACCESS, PEER REVIEWED (REFEREED) JOURNAL
Vol. 3, Issue 01, Jan 2020

2.1 Study Area

The study was conducted in Mahoba district, situated in the Bundelkhand region of south-western Uttar Pradesh, India. Geographically, Mahoba lies at approximately 25°18′ N latitude and 79°53′ E longitude, covering 3,071 km². The semi-arid climate, rocky terrain, and dry deciduous vegetation favor the growth of stress-tolerant plants with ethnomedicinal significance. The district is inhabited by tribal groups such as Saharia, Gond, and Kol, and semi-nomadic communities including Kanjad, Kuchbandhiya, Kanfara, Parkola, and Jasaundhi. These communities maintain extensive knowledge of medicinal plant use, particularly for envenomation and other primary healthcare needs (Jain, 1991; Sharma et al., 1987).

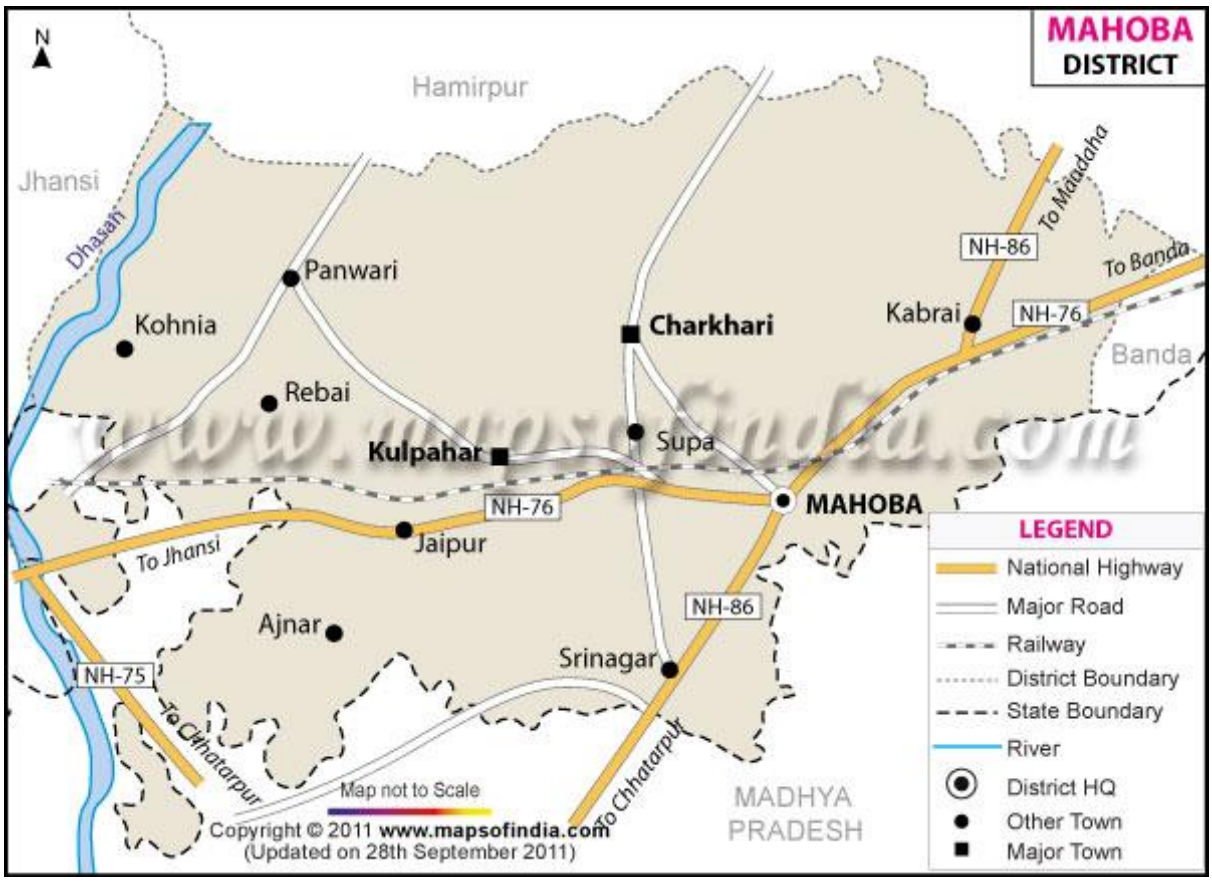

Figure 1. Location map of Mahoba district in Bundelkhand region, Uttar Pradesh, India.

1.2 Data Collection

Ethnobotanical information was collected from traditional healers, elderly community members, and other knowledgeable informants using semi-structured questionnaires, open-ended interviews, and participatory observations. Emphasis was placed on recording the botanical name, local name, plant parts used, method of preparation, and mode of administration. Data reliability was enhanced through repeated field visits and cross-verification among multiple informants (Jain, 1964; Cotton, 1996).

2.3 Plant Collection and Identification

Specimens were collected following standard herbarium protocols, including pressing, drying, and mounting (Jain & Rao, 1977). Identification was performed using regional floras, taxonomic keys, and comparison with authenticated herbarium samples. Voucher specimens were deposited in the Duthie Herbarium, Department of Botany, University of Allahabad, Prayagraj, India.

eISSN 2581-8996
ONLINE
THE INTERNATIONAL JOURNAL OF ADVANCED RESEARCH IN MULTIDISCIPLINARY SCIENCES (IJARMS)
A BI-ANNUAL, OPEN ACCESS, PEER REVIEWED (REFEREED) JOURNAL
Vol. 3, Issue 01, Jan 2020

2.4 Data Analysis

Plant species were analyzed for family distribution, plant parts used, and modes of administration. Ethnomedicinal uses were compared with existing literature to assess novelty and regional specificity (Pushpangadan et al., 1996; Kirtikar & Basu, 1993). The frequency of plant parts used was calculated to determine community preference.

3. Results

3.1 Medicinal Plants for Scorpion Sting

Eight plant species from seven families were documented for scorpion sting management (Table 1). Leaves were the most frequently used plant part (50%), followed by roots (25%) and seeds (25%).

Table 1. Ethnomedicinal plants used for scorpion sting in south-western Uttar Pradesh

S. No.	**Botanical Name**	Family	**Local name**	**Used Part**	**Field No.**
1.	Argemone mexicana Linn.	Papaveraceae	Pili Kateli	Root	81
2.	Cleome gynandra Linn.	Cleomaceae	Sada hurhuria	leaves	342
3.	*Semecarpus anacardium* Lf.	Anacardiaceae	Bhelwa	Seed	372
4.	*Tamarindus indica* Linn.	Caesalpiniaceae	Imli	Seed	06
5.	*Helianthus annuus* L.	Asteraceae	Surajmukhi	Leaves	363
6.	*Catharanthus roseus* (Linn.) G. Don	Apocynaceae	Sadabahar	Leaves	200
7.	Tabernaemontana divericata (L.) R.Br.	Apocyanaceae	Chandni	Roots	337
8.	*Holoptelea integrifolia* (Roxb.) Planch.	Ulmaceae	Chilbil	Leaves	365

3.2 Plant Part Utilization

Leaves were predominantly used for decoctions and topical applications due to their high bioactive metabolite content, including flavonoids, tannins, and alkaloids. Roots were mainly used for decoctions to achieve systemic effects, while seeds were crushed into pastes for direct topical application at the sting site. This

eISSN 2581-8996
ONLINE
THE INTERNATIONAL JOURNAL OF ADVANCED RESEARCH IN MULTIDISCIPLINARY SCIENCES (IJARMS)
A BI-ANNUAL, OPEN ACCESS, PEER REVIEWED (REFEREED) JOURNAL
Vol. 3, Issue 01, Jan 2020

preference highlights the community's understanding of sustainable harvesting and pharmacological efficacy (Pushpangadan et al., 1996; Jain, 1991).

3.3 Preparation and Administration

- **Decoctions:** Leaves or roots boiled and consumed orally to mitigate systemic effects of envenomation.
- **Paste/Poultice:** Seeds or leaves applied topically to relieve pain, swelling, and inflammation.
- **Combination remedies:** Some preparations combined multiple plant parts for enhanced efficacy.

4. Discussion

4.1 Traditional Knowledge and Practices

Local communities exhibit sophisticated knowledge regarding plant selection, preparation methods, and dosage for scorpion sting management. Leaves are preferred for their non-destructive harvesting potential, while roots and seeds are recognized for higher potency but require careful management to avoid overexploitation (Chopra et al., 1956; Nayar & Chopra, 1987).

4.2 Pharmacological Relevance

The documented plants contain bioactive compounds with potential therapeutic effects:

- **Alkaloids (*Argemone mexicana, Catharanthus roseus*):** Analgesic and anti-inflammatory properties.
- **Flavonoids and tannins (*Cleome gynandra, Helianthus annuus*):** Anti-inflammatory and antioxidant effects.
- **Neuroprotective and cardiotonic compounds (*Semecarpus anacardium, Tamarindus indica*):** May counter systemic effects of scorpion venom (Isbister & Bawaskar, 2014; Yadav & Singh, 2013).

These findings validate the empirical use of these plants and suggest potential for development of plant-based anti-venom therapies.

4.3 Conservation Implications

Species harvested for roots and seeds face higher risk due to destructive collection. Encouraging cultivation in home gardens, sustainable harvesting, and community-based conservation strategies is essential to protect these valuable resources and associated traditional knowledge (Jain, 1991; Pushpangadan et al., 1996).

4.4 Comparison with Other Studies

Several species such as ***Argemone mexicana*** and ***Semecarpus anacardium*** have been reported in earlier studies for envenomation treatment in India (Sharma et al., 1987; Kirtikar & Basu, 1993). Other species, including ***Holoptelea integrifolia***, demonstrate regional specificity, indicating adaptation to local ecology and availability.

5. Conclusion

This study documents eight ethnomedicinal plants used in the management of scorpion stings in south-western Uttar Pradesh. Leaves were the most frequently utilized plant part, reflecting both accessibility and therapeutic efficacy. The findings emphasize the importance of preserving traditional knowledge and plant biodiversity, and they provide a foundation for future pharmacological research to develop plant-based anti-venom agents.

6. Acknowledgments

We extend sincere gratitude to the local healers and community members of Mahoba district for sharing their knowledge. We also acknowledge the Department of Botany, University of Allahabad, for herbarium facilities and technical support.

7. References

1. Anonymous. (2000). *The Wealth of India – Raw Materials.* CSIR, New Delhi.
2. Barnes, P. J. (2000). Mechanisms in chronic obstructive pulmonary disease. *New England Journal of Medicine*, 343(4), 269–280.
3. Chippaux, J. P. (2012). Epidemiology of scorpionism: A global appraisal. *Toxicon*, 60(5), 435–449.
4. Chopra, R. N. (1956). *Medicinal and Economic Plants of India.* CSIR, New Delhi.
5. Chopra, R. N., Nayar, S. L., & Chopra, I. C. (1956). *Glossary of Indian Medicinal Plants.* CSIR, New Delhi.
6. Fabricant, D. S., & Farnsworth, N. R. (2001). The value of plants used in drug discovery. *Environmental Health Perspectives*, 109(1), 69–75.
7. Isbister, G. K., & Bawaskar, H. S. (2014). Scorpion sting. *The Lancet*, 383(9918), 406–416.
8. Jain, S. K. (1964). Ethnobotany: Its scope and study. *Indian Journal of Forestry*, 10(1), 1–12.
9. Jain, S. K. (1991). *Dictionary of Indian Folk Medicine and Ethnobotany.* Deep Publications, New Delhi.
10. Kirtikar, K. R., & Basu, B. D. (1993). *Indian Medicinal Plants.* 2nd Edition. Lalit Mohan Basu, Allahabad.
11. Nayar, B. K., & Chopra, R. (1987). *Ethnobotany of India.* CSIR, New Delhi.
12. Pushpangadan, P., & Nair, R. (2000). Medicinal plants in India. *Current Science*, 79(6), 693–704.
13. Pushpangadan, P., George, V., & Nair, R. (1996). Traditional medicinal plants of India: Ethnobotanical studies. *Indian Journal of Traditional Knowledge*, 1(1), 1–10.
14. Sharma, R., Srivastava, R., & Tiwari, S. (1987). Ethnobotanical studies in Uttar Pradesh. *Journal of Economic and Taxonomic Botany*, 11(3), 453–460.
15. Yadav, S., & Singh, R. (2013). Ethnobotanical documentation of medicinal plants in Bundelkhand region. *Indian Journal of Traditional Knowledge*, 12(2), 241–247.