ISSN: 2287-688X

Annals of
Plant Sciences

Volume 12, Issue 04 (2023) pp. 5832-5841

Research Article

Ethnobotanical Information for the Treatment of Snake Bite and Scorpion Stings by Traditional Health Practitioners in Bagalkot District, Karnataka, India

Vijaymahantesh Gobbi and Kotresha Katrahalli

Taxonomy and Floristic Laboratory, Department of UG, PG, and Research in Botany, Karnataka University's, Karnataka Science College, Dharwad, India

Abstract

Ethnobotanical survey was undertaken to collect information on medicinal plants used in the treatment of snake bites and scorpion stings in Bagalkot District, Karnataka. The field survey was conducted from January 2020 - October 2022. The indigenous knowledge of local traditional healers about the native plant species used for medicinal purposes was collected using a questionnaire through personal interviews during field visits. In the present investigation, 14 plant species, belonging to 14 genera and 12 families used by the different traditional practitioners against snake bite and scorpion stings were documented. Among the collected species 8 were used for snake bites and 4 for scorpion stings. *Ruellia patula* Jacq. and *Strychnos nux-vomica* L, was used for both treatments. The most popular preparations are in powder, juice, and paste. They used different plant parts viz., leaf (5), root (3), seed (2), whole plant (2), bark (1), and stems (1) are utilized in the medicine preparation by the local practitioners. The medicinal practitioners are above the age of 50; which indicates a lack of interest in the young generations. At present both the government and non-government organizations are involved in the documentation of traditional medicinal knowledge before it becomes vanished it will be helpful for the protection of our traditional knowledge and its documentation is for supporting IPR.

Keywords: *Medicinal plants, Snake bite, Scorpion sting, Bagalkot district.*

Introduction

Over the course of human history, people have used medicinal herbs. This knowledge has been passed down orally from generation to generation. In the last 20 years, there has been a significant increase in scientific attention to the use of medicinal plants to prevent the effects of snake bites (Santosh and Shivaji, 2004). A considerable health risk, snake bites cause remarkable discomfort and a high fatality rate in victims. More than 200,000 cases have been reported in India alone, and it is believed that 35,000 to 50,000 people are passing away each year (Bawaskar, 2004).This happens because people living in rural areas when get bitten by a snake or sting by a scorpion, trust the local nativaidyas (Traditional healers or medicine men). The villagers are taken treatment and get well soon.

The objective of the current study was to document the diversity of ethnomedicinal plant species utilized by local traditional healers in the Bagalkot district as well as local methods for the preservation and sustainable use of the area's biological resources.

Materials and Method

Study Area: Bagalkot district, is an administrative district in the Indian state of Karnataka. The district is located in the northern part of Karnataka and is surrounded by the districts-Belgaum, Gadag, Koppal, Raichur, and Bijapur. Geographically, it is located in the coordinates 16.18°N and 75.7°E. It is situated along the banks of the River

***Corresponding Author:**
Kotresha Katrahalli;
DOI: http://dx.doi.org/10.21746/aps.2023.12.4.4

Ghataprabha and it lies at an average elevation of 533 meters above mean sea level. It was previously under the administration of the Bijapur district and in 1997, the new Bagalkot district came into existence during the 50th year of India's independence.The district consists of nine C.D. blocks: Badami, Bagalkot, Bilagi, Hunugund, Jamakhandi, Mudhol, Ilkal, Guledgudd, and Rabhakavi Banahatti. (Fig.1)

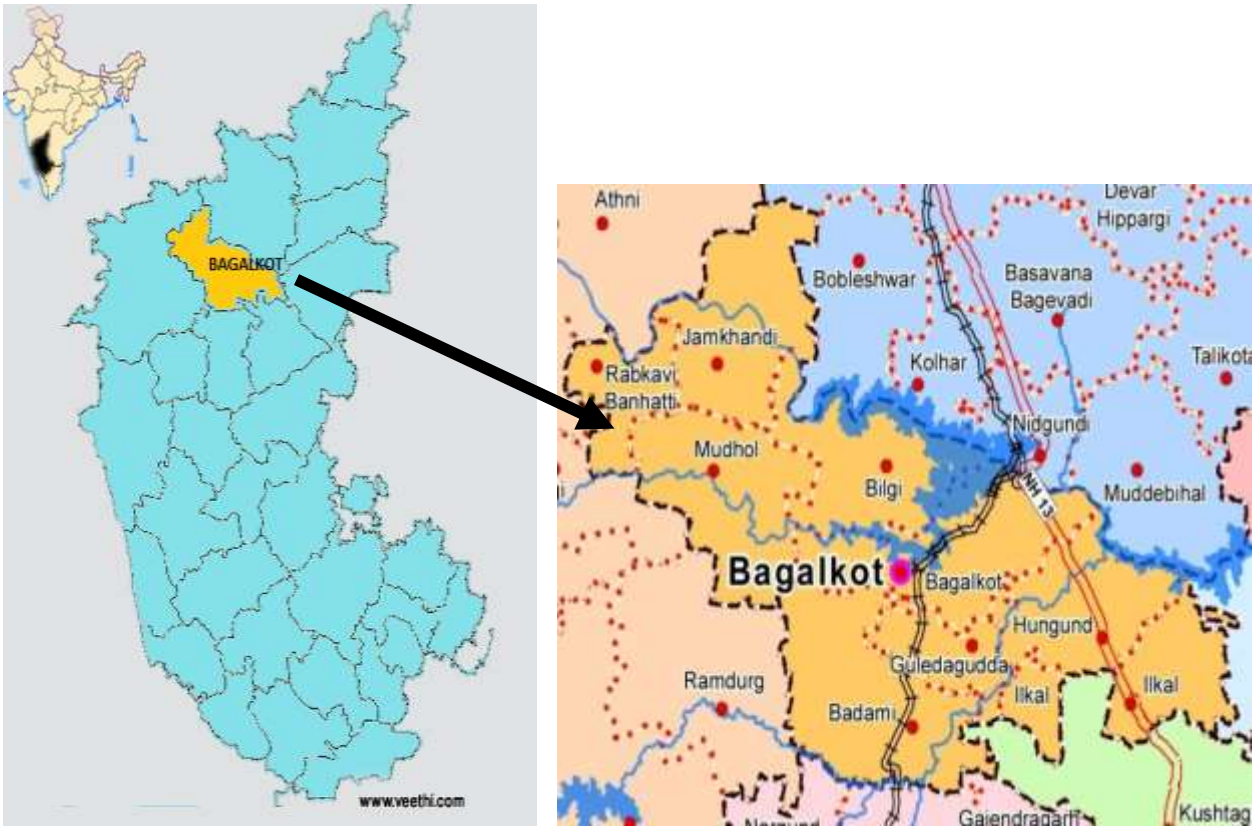

Figure 1: Study area: Bagalkot District region, Karnataka, India

Ethnobotanical Data Collection: The present work was carried out in villages of the nine talukas of Bagalkot district, Karnataka**.** The extensive studies were conducted during the period January 2021 to November 2022 with the help of local informants and local Traditional Health Practitioners (THPs) including males and females of different age groups, education levels, and experience of medicinal plant utilization.

Plant specimens are to be collected with flowers, fruits, or preferably both. Herbaceous plants were picked up entirely. Proper care is taken to collect the underground parts of the plants, twigs of about 35cm in length with flowers and fruits are chosen, given the collector number, and noted the field observations in the field notebook.

Questionnaires (Datasheets) have been prepared to collect information from Traditional Health Practitioners. It includes the name of the traditional practitioner, age, occupation, date of visit, knowledge, locality, vernacular names of plants, botanical name, family, habit, dosage, etc, and a field notebook is also maintained to record the information during the interactions.

Botanical Identification: The plant specimens collected during field visits were identified with the help of flora (Cooke, 1903, 1958; Gamble,1967; Saldanha, 1984&1996; Singh,1988). The identified plant was verified and updated the names as per International Plant Names Index (IPNI, 2022).

Preparation of Herbarium: The plants collected at the time of field visits were prepared as a herbarium by Jain and Rao 1997. To protect against insect and fungal attacks the herbarium sheet is poisoned with 95% ethanol.

Result and Discussion

According to the results of the current study, snakebite and scorpion sting treatments in the Bagalkot district involve the use of 14 plant species from 12 families and 14 genera. Eight of the listed plant species are used to treat snake bites, and four are used to treat scorpion stings. *Strychnos nux-vomica* L. and *Ruellia patula* Jacq. are used for both treatments. Five shrub species, three tree species, three herb species, three climber species, and one rhizome species were identified among the analyzed for habit (Fig. 2). While the analysis of plant parts revealed that leaves were the most frequently used as medicine in five species, three roots, two seeds, and whole plant species were also used, one species used stems and bark parts (Fig. 3). The therapeutic herbs were used in whole or in part, as powder, paste, juice, or pieces of plant parts (Fig. 4). The detailed information such as the local name of the plant, parts used, and methods of preparation of botanical products, dosage, and mode of administration that were documented by the local people are tabulated in Table 1.

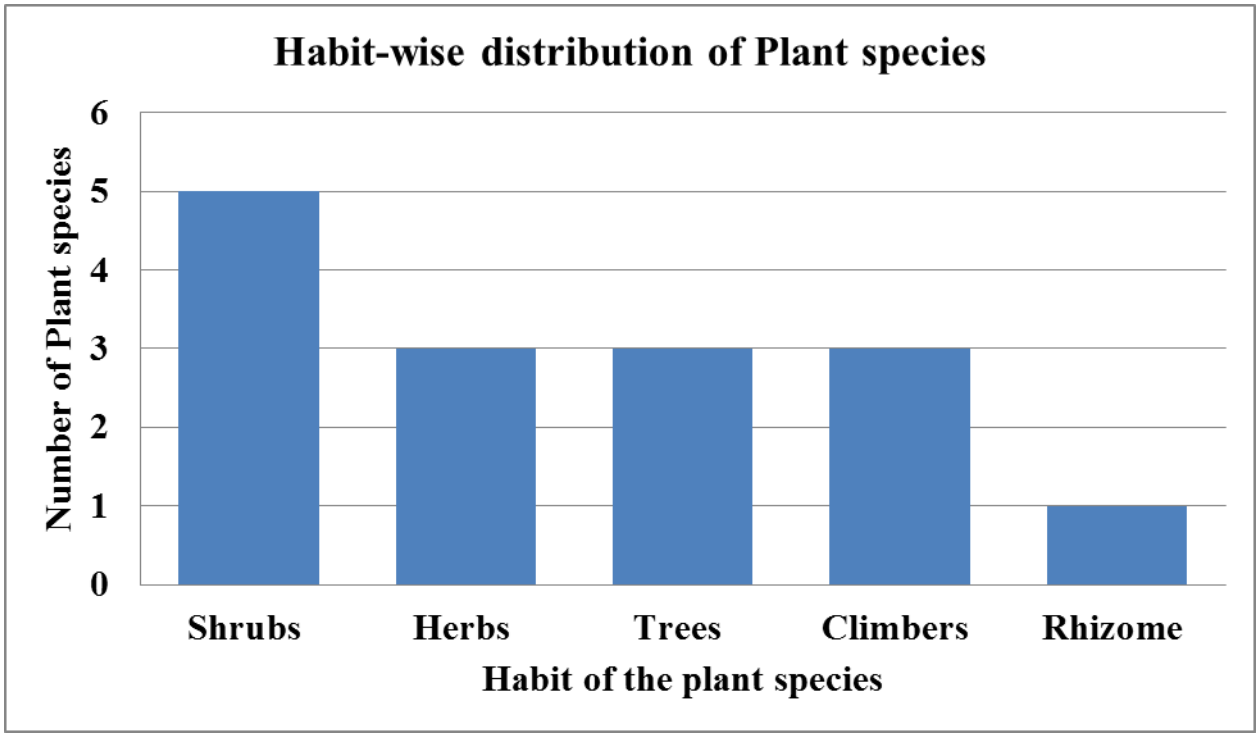

Figure 2: Habit-wise distribution of plant species in the study area

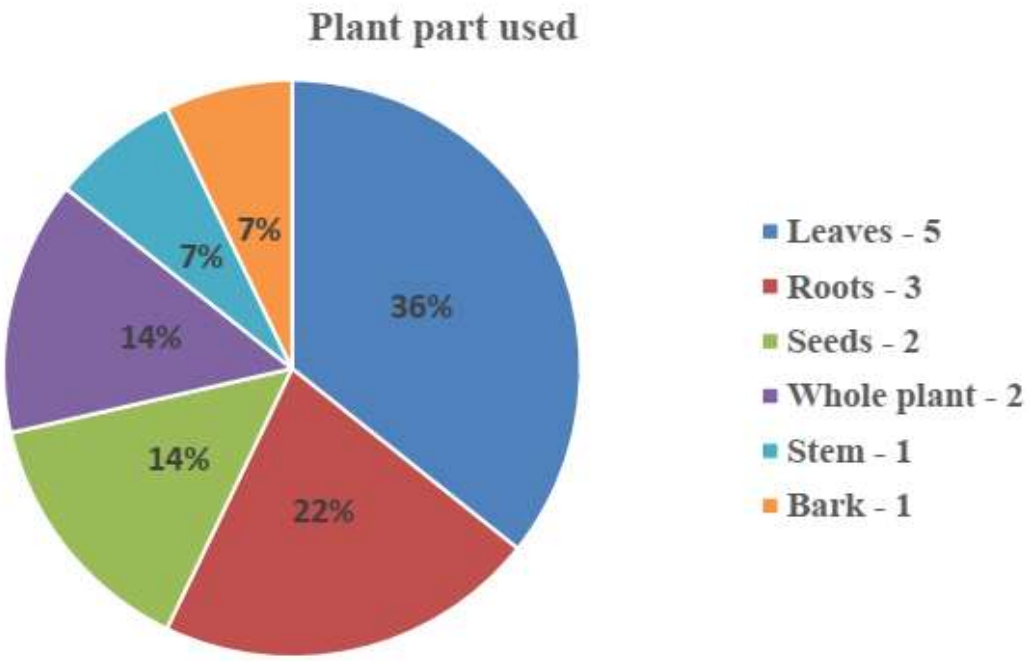

Figure 3: Plant parts used in treating snake bites and scorpion sting

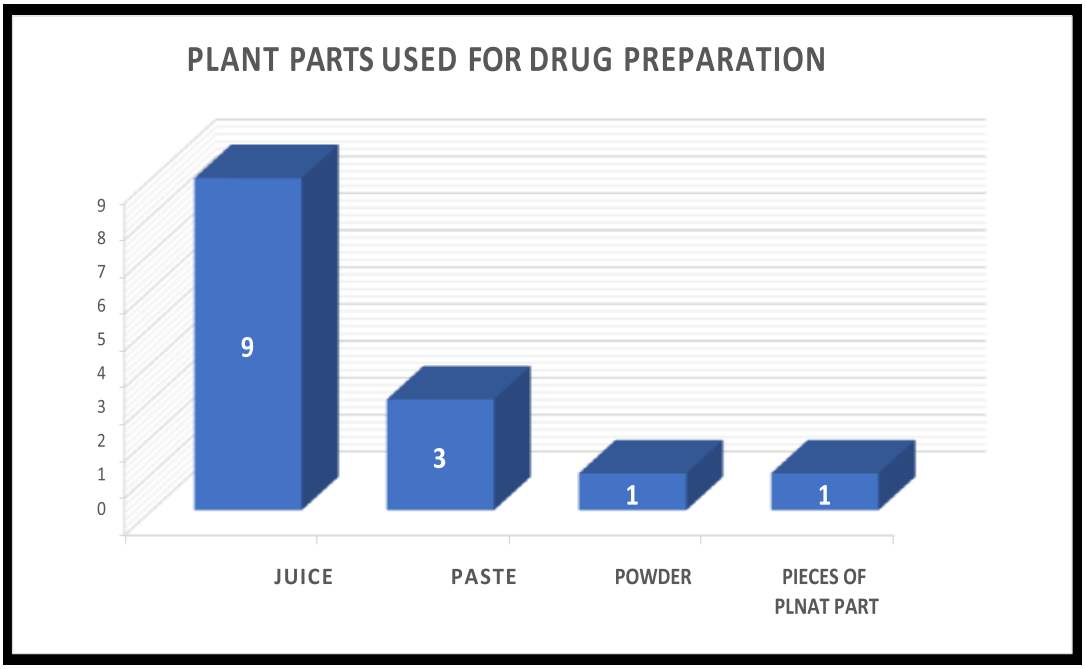

Figure 4: Mode of the utilization of medicinal plants

Table No 1: List of medicinal plants used to treat snake bites and scorpion stings in Bagalkot District, Karnataka, India

SI. No	Botanical Name & Family	Local Name	Habit	Par-tUsed	Mode of Preparation	Dosage	Used in treatment
1	*Amaranthus viridis* L.(Amaranthaceae)	Haripalle	Herb	Whole plant	The whole plant is grinded and tied to the bite portion with a cotton cloth.	For 2 hours.	Scorpion sting
2	*Argemone mexicana* L.(Pappaveraceae)	Golagolike	Shrub	Bark	5 cm in size bark is chewed with two betel leaves.	Two times after 10 minutes	Scorpion sting
3	*Aristolochia indica* L.(Aristolochiaceae)	Gopalputti /Ishwari	Climber	Root	The root is juiced.	50 ml of juice in 250 ml of water is used to drink.	Snake bite.
4	*Cadaba fruticosa* (L.) Druce (Capparaceae)	Chouguna shi	Shrub	Leaf	50 g of leaves are ground with water and filtered through A cotton cloth.	100 ml of juice is used to drink	Snake bite.
5	*Calotropis gigantea* (L.)W.T.Aiton (Apocynaceae)	Bili Yekki	Shrub	Leaf	3 to 4 leaves are grinded and fil-tered with a cotton cloth.	Pour 10 ml of juice into the nose one time	Snake bite.
6	*Chloroxylon swietenia* DC. (Rutaceae)	Mashaval gida	Tree	Stem	The stem will be ground on stone to make juice with 10 ml of water.	10 ml two times once	Snake bite.
7	*Datura metel* L. (Solanaceae)	Kari-madhagunaki	Shrub	Leaf	Leaves are squeezed.	Applied on bite portion	Scorpion sting
8	*Dracaena trifasciata* (Prain)Mabb. (Asparagaceae)		Herb	Leaf	5-6 leaves are juiced.	500 ml of juice is used to drink.	Snake bite.
9	*Pentatropis capensis* (L.f.)Bullock (Apocynacea)	Muktitappa-lu	Climber	Root	Roots are dried in the shadows to prepare powder. Pour water into a glass, add the powder, and filter with a cotton cloth to extract the juice.	50 ml of juice was given to drink.	Snake bite

10	*Ruellia patula* Jacq. (Acanthaceae)	Kirnataka	Herb	Whole plant	The whole plant is dried in the shade and made into powder.	10 gm of powder three times a day once.	Snake bite and scorpion sting
11	*Strychnos nux-vomica* L. (Loganiaceae)	Hemmusti	Tree	Seed	The seed is rubbed with cow urine.	Applied on the snake and Scorpion sting	Snake and scorpion sting
12	*Tamarindus indica* L.(Fabaceae)	Hunase gida	Tree	Seed	Seeds are ground and made into a paste.	Applied on the bitten region.	Scorpion sting
13	*Tinospora cordifolia* (Willd.)Hook.f. & Thomson (Menispermaceae)	Amruta-balli	Climber	Root	Roots are grinded, and 10g of pepper powder is mixed with 5ml of freshly prepared juice.	Pour the content into 250ml of water in a separate glass and use it to drink once.	Snake bite.
14	*Wrightia antidysenterica* (L.) R.Br. (Apocynaceae)	Halagatti	Shrub	Leaf	Leaves are juiced.	Drink juice once a day	Snake bite.

In India, the majority of people pursue agricultural, pastoral, and other outdoor livelihoods, there is a moderate to high risk of being bitten by a snake. Many plants in India have been proven to be efficient snake venom countermeasures (Chopra, *et al*., 1956; Kirtikar and Basu, 1975; Nadkarni, 1976; Alam and Gomes, 2003).

The juice from the root and leaves of *Aristolochia indica* and *Calotropis gigantia* have been documented to be commonly utilized by the native people of Southern India to treat snake bite. (Prabhu & Kumuthakalavalli, 2012; Sing, *et al*., 2012; Chinnappan Alagesaboopathi, 2013; Lakshmana and Sreenath, 2014; Laddimath. 2021).

For snake bite around 15 plants like *Achyranthus aspera*, *Aristolochia indica*, *Moringa pterygosperma*, *Calotropis gigantia,* etc., belonging to 11 families' were reported by Hiremath and Taranath. (2010). The Paliyans of Tirunelveli Hills of the Western Ghats use *Achyranthes aspera* and *Aristolochia indica* to cure various poisonous bites. Thangadurai D. (1998).

Figure 5: Some plant species used to treat snake and scorpion bites

Conclusion

The study found that various medicinal herbs are used as antidotes for snakebites and scorpion stings. This investigation ravels that, the

conventional medical system is still fully functional. In rural areas, herbal remedies are sometimes the only and least expensive alternative for treating numerous illnesses. The indigenous populations there have a profound understanding of ethnomedicine and the research region is incredibly florally diverse. By testing these plants for their active ingredients, which will be helpful in the development of novel medications, this ethnomedical knowledge should be properly documented for the benefit of future generations. Plants that the local healers believed to have therapeutic value may also be supported experimentally.

Acknowledgments

The authors are grateful to all the traditional healers of Bagalkot for providing valuable information relevant to this work. The authors are also thankful to the authorities of Karnataka Science College Dharawad and Karnataka University, Dharawad, for providing good support and facilities. The authors would also like to thank the field assistants, Mr. Sangamesh Waladunki, Mr. Muttu Kalyani, and Mr. Shravankumar Kalyani.

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Source of support: Nil;
Conflict of interest: The authors declare no conflict of interests.

Cite this article as:
Gobbi, V and Kotresha, K. "Ethnobotanical Information for the Treatment of Snake Bite and Scorpion Stings by Traditional Health Practitioners in Bagalkot District, Karnataka, India." *Annals of Plant Sciences*.12.04 (2023): pp. 5832-5841.