Research Article

Ethnobotanical survey on Folk Medicine in the management of animal bite poisons in the forest tract of Salem region of Tamil Nadu, India

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ABSTRACT

Background: Traditional healers are sought after for the treatment of animal poisons in the tribal regions across the world. Centre for Traditional Medicine and Research (CTMR) documented these practices in the erstwhile Salem district. The objective of the study was to explore the ethnobotanical knowledge of the traditional healers in the treatment of animal poisons.

Materials and Methods: The study was carried out over a period of two years 2009-2011 by way of structured interviews, photo documentation of plants used and process adopted for the treatment including chanting of mantras among the folk healers of the hilly regions of Salem, Namakkal, Dharmapuri and Krishnagiri Districts of Tamil Nadu. Out of 180 healers interviewed, twenty eight healers who treated poison bites took part in the study voluntarily and shared their practices. This paper enumerates the plants used either individually or as part of a polyherbal formulation.

Results: The healers treat unknown insect bites, scorpion stings, wasp, wild spider, bee stings, snake bites and allergy caused by centipedes. Many times allergic skin diseases- urticarial rashes are also classified as poison bites by these healers. The healer identified the poisonous nature by the ability of the patient to distinguish tastes of certain plants. 49 species of medicinal plants were used by the healers, with most commonly used being *Aristolochia bracteata.*

Conclusion: Most of the plants used by the healers also find reference in the classical texts of the codified systems of medicine and it is worth taking up some of the most frequently used ones for pharmacological studies

Key words: Folk treatment, poison bites, Tribe, Siddha, Ayurveda

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INTRODUCTION

People dwelling in the hilly, forest regions and agrarian area are prone to be stung or bitten by scorpions, bees, wasps, centipedes, spiders and snakes. Various traditional remedies and ethnic practices are being used by numerous folk healers. '*Visha vaidyam'* is an exclusive branch of Traditional Medicine practice of India and mostly practiced by tribal healers of the forest tract. Many times certain dermatological manifestations caused by allergies are also attributed to poison bites and is managed by certain herbal therapy.

Snake bite is an important cause of morbidity and mortality. Abundant undisturbed vegetation, rich flora and fauna and a scattered population using forest paths make people in these areas particularly prone to snake bite. Ignorance, use of local herbal treatment and indigenous medicines and delay in transporting patients due to the difficult terrain prevent patients from reporting in time to centers where snake anti-venom is available. The present study was done to document various folk healing practices adopted by the healers for the management of poison bites in Tamil Nadu, India.

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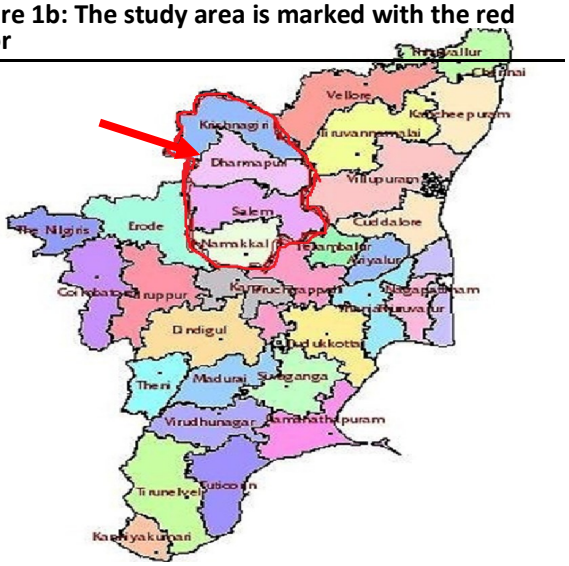
MATERIALS AND METHODS

Study area

The study area encompasses the present four districts, Salem, Dharmapuri, Krishnagiri and Namakkal of Tamil Nadu state, India (Figure 1a - b). These four districts were formed by quadrifurcation in three stages of the erstwhile Salem District. According the District Gazettes of the unified Salem district, this region constituted the major of the tribal tract of Tamil Nadu (3.5 lakhs out of the total 6.51 lakhs of tribal population of Tamil Nadu). These districts are known for their hilly ranges, forests and have a significant tribal and forest dwelling non-tribal population (the highest concentration in the state) and therefore emerge as a potential area for documentation of traditional knowledge.

Figure 1a: The study area is marked with the red color

Figure 1b: The study area is marked with the red color



The areas where the population of Scheduled Tribes exceeds 50% of the total population are designated as "Integrated Tribal Development Programme (ITDP)" areas. Those seven districts of Tamil Nadu are viz., Salem, Namakkal, Dharmapuri Villupuram, Thiruvannamalai, Tiruchirapalli and Vellore, which comprises primarily the Servaroy hills and Kalvarayan hills.

Three (Salem, Namakkal and Dharmapuri) out of four districts of the study area fall under the ITDP. The major tribal group of the project area consists of the Malayali tribe followed by Irula Kattunayakan, Kurumans, Malai Arayan, Malai Pandaram, MalaiVedan and Malaikkuravan. Literacy rate of the tribal population is 27.9%. Most of the tribals in Tamil Nadu are cultivators, agriculture labourers or dependent on forest produce for their livelihood.

Salem district is located between 11° 14`and 2° 53` North Latitude and between 77° 44` and 78° 50` East Longitude and covers the geographical area of 5205 Sq. km. Salem is the headquarter of Salem district. Namakkal district lies between 11° 00'and 11° 36' North Latitude and between 77° 28' and 78° 30' East Longitude. Dharmapuri district is located between latitudes North 11° 47' and 12° 33' and longitudes East 77° 02' and 78° 40', which occupies an area of 4497.77 km² (i.e. 3.46% of Tamil Nadu). Krishnagiri District is situated between 11° 12' and 12° 49' North Latitude and between 77° 27' to 78° 38' East Longitude.

Identification of Healers

The hilly regions of the study area posed a real challenge even in identifying the healers. The assistance and guidance from different Government departments were sought in identifying the healers. The association of local traditional health practitioners was consulted. District Siddha Medical officers, deputy directors of public health and district

public health nurses helped to identify local healers through their field staff like village health nurses. The Tamil Nadu Government Siddha and Ayurveda doctors working in the study area were also helped in identifying healers. The Divisional Forest Officers and field staff of the Tamil Nadu forest department were consulted about habitations. The tribal associations and Village Forest Committees and tribal headman assisted identification of healers. Herbal raw drug sellers, gatherers of herbals, retail stores selling Siddha and Ayurveda medicines also provided inputs.

Data Collection

Questions for semi-structured interviews to cover knowledge, resources, socio-cultural aspects of health traditions from healers and households were developed. The format was discussed among other experts and validated. This was made in vernacular (Tamil) for better understanding of the collaborators and also orally explained wherever required. The specific information on use of different herbals in the treatment of poison bites, plant part used, quantity used, type of bite for which it was used, duration of use and dietary restriction, if any were collected. The healers also showed the plants from their neighborhood. These plants were botanically identified by Vaidyar S. Usman Ali, a Pharmacognosist and the photos were maintained at CTMR. Whichever plants not shown were recorded based on the healer's oral descriptions and cross verified by local names with the help of other healers.

RESULTS

Out of 180 healers interviewed in the region, only 28 healers were frequently treating poison bites. The healers treat unknown insect bites, scorpion stings (*Hottentotta tumulus*), wasp, wild spider (*Poecilotheria regalis*), bee stings (*Apis florae*), snake bites and allergy caused by centipedes. Many times, allergic skin diseases and urticarial rashes were also classified by these healers as a consequence of unknown poison bites.

The healer identified the poisonous nature by the ability of the patient to distinguish tastes. While chewing the leaves of '*Andrographis paniculata',* if the natural bitter taste of the plant is not felt by the patient, then the healer confirms the bite was by poisonous snake. Treatment for such bite includes herbals **(Table 1)** administered as nasal drops, eye drops and oral medicine. The oral medicines may be single herbal ingredient or polyherbal combination. Usually the plants used for the treatment was collected on full moon days mostly in January- February coinciding with Tamil month of '*Thai*'. The healers chant mantra, offer prayers before plucking the plant. They store the powders in a container made of the wild bottle gourd **(Figure 2).**

Figure 2: Container made from bottle gourd to store herbal powder

Manual stimulation and stimulation through forced inhalation of *Navacharam* (ammonium chloride) and slaked lime is used to awaken unconscious patient. A strict food regulation including abstaining from alcohol, tobacco and non vegetarian food is advised by most healers. Treatment also includes rituals, chanting mantras, tying amulets on limbs (in most cases, the stings or bites occur in the limbs) and offerings to God.

Table 1: Plants used in animal bite poisons by the traditional healers in Salem region of Tamil Nadu

S. No.	Tamil name (Siddha)	Sanskrit name (Ayurveda)	Botanical name	Family	Habit	Part used
1	Vengaayam	Palandu	Allium cepa	Liliaceae	Herb	Bulb
2	Perumarunthu	Ishvari	Aristolochia indica	Aristolochiaceae	Twinner	Root
3	Karudan kizhangu	Patalagaruda	Corrallo carpusepigaeus	Cucurbitaceae	Tendril	Root
4	Nagamalli	saptala	Rhinacanthus communis	Oleaceae	Shrub	Leaf
5	Milagu	Maricha	Piper nigrum	Piperaceae	Climber	Fruit
6	Vetrilai	Tambula	Piper betle	Piperaceae	Climber	Leaf
7	Kambu	Nali	Pennisetum typhoides	Gramineae	Grass	Grain
8	Kuppaimeni	Haritamanjari	Acalypha indica	Euphorbiaceae	Herb	Leaf
9	Nayuruvi	Apamarga	Achyranthes aspera	Amaranthaceae	Herb	Root
10	Nilavembu	Kirata	Andrographis paniculata	Acanthaceae	Herb	Leaf
11	Naganangai	Nanga	Polygala senega	Polygalaceae	Herb	Leaf
12	Milaganangai	Nanga	Andrographis Sp.	Acanthaceae	Herb	Root
13	Kattujeerakam	Somraji	Centratherum anthelminticum	Asteraceae	Herb	fruit
14	Naivelai	Arkakanta	Cleome viscose	Capparidaceae	Herb	Leaf
15	Kariasalai	Bhringaraja	Eclipta alba	Asteraceae	Herb	Leaf
16	Vellarugu	Nagajihva	Enicostemma littorale	Gentianaceae	Herb	Whole plant
17	Thara	Trayamana	Mollugo oppositifolia	Molluginaceae	Herb	Leaf
18	Sivanarvembu	Sivanimba	Indigofera aspalathoides	Papilionaceae	Erect herb	Whole plant
19	Avuri	Neeli	Indigofera tinctoria	Papilionaceae	Herb	Whole plant
20	Thumbai	Dronapushpi	Leucas aspera	Labiatae	Herb	Leaf
21	Siriyanangai	Meradu	Polygala chinensis	Polygalaceae	Herb	leaf
22	Periyanangai	Periyananka	Polygala elongata	Polygalaceae	Herb	Root
23	Naganangai	Nanga	Polygala senega	Polygalaceae	Herb	Root
24	Kinatradipoondu		Tridax procumbens	Asteraceae	Herb	Whole plant
25	Kinatrupasi	Shitashiva	Parmelia perlata	Parmeliaceae	Moss	Moss
26	Sathisaranai,	Swetapunar-nava	Trianthema decandra	Ficoidaceae	Herb	Root
27	Chinni	Sinni	Acalypha fruiticosa	Euphorbiaceae	Shrub	Leaf
28	Adathodai	Vasa	Adhatoda vasica	Acanthaceae	Shrub	Leaf
29	Azhinjil	Ankola	Alangium salvifolium	Alangiaceae	Tree	Bark
30	Erukampoo	Arka	Calotropis procera	Asclepiadaceae	Shrub	Flower

Table 1: Plants used in animal bite poisons by the traditional healers in Salem region of Tamil Nadu

S. No.	Tamil name (Siddha)	Sanskrit name (Ayurveda)	Botanical name	Family	Habit	Part used
31	Elumichai	Nimbuka	Citrus acida	Rutaceae	Tree	Juice
32	Kattukodi	Garudi	Cocculus hirsutus	Menispermaceae	Climber	Leaf
33	Vilvam	Bilva	Aegle marmelos	Rutaceae	Tree	Leaf
34	Vagai	Sirisha	Albezzia lebeck	Leguminosae	Tree	Root
35	Vembu	Nimba	Azadirachta indica	Meliaceae	Tree	Leaf
36	Nanjundapattai	Ingudi	Balanites roxburghii	Balanitaceae	Tree	Bark
37	Sarakonrai	Suvarnaka	Cassia fistula	Fabaceae	Tree	Bark
38	Nattunilavagai	Bhutalapota	Cassia obovata	Fabaceae	Herb	Leaf
39	Thengayennai	Narikela	Cocos nucifera	Palmae	Tree	oil
40	Thavasumurungai	Pindi	Justicia tranquebarensis	Acanthaceae	Under shrub	Leaf
41	Vazhaithandu	Kadali	Musa paradisiaca	Musaceae	Herb	Stem
42	Vazhaipattai	Kadali	Musa paradisiaca	Musaceae	Herb	Leaf sheath juice
43	Pungan	Karanja	Pongamia glabra	Fabaceae	Tree	Seed
44	Vanni	Shami	Prosopis spicigera	Fabaceae	Tree	Root bark
45	Ettipattai	Visha-mushti	Strychnosnux vomica	Loganiaceae	Tree	Bark
46	Nochi	Nirgundi	Vitex negundo	Verbenaceae	Tree	Tender leaves
47	Malaithangiver	Dhumrapatra	Aristolochia bracteata	Aristolochiaceae	Herb	Root
48	Veliparuthi	yugaphala	Daemia extensa	Asclepiadaceae	Twiner	leaf

In all, 48 medicinal plant species were used by the healers and different parts of the same plants were used by different healers. *Aristolochia bracteata* is the most widely used plant across all four districts, followed by *Corallocarpus epigaeus, Enicostemma littorale* and *Polygala chinensis* (Table 2).

Different families to which the plants belong to are; *Leguminosae* (7 plants), *Acanthaceae* (5 plants), *Polygalaceae* (3 plants), *Aristolochiaceae* (2), *Asclepiadaceae* (2), *Compositae* (2), *Euphorbiaceae* (2), *Musaceae* (2), *Piperaceae* (2), *Rutaceae* (2) and one plant each in nineteen other families.

Table 2: Most commonly used Plants by healers for poisonous bites

Plants	No. of healers using
Aristolochia bracteata	7
Corrallocarpus epigaeus	6
Enicostemma littorale	6
Polygala chinensis	6
Strychnosnux vomica	6
Andrographis paniculata	4

Leaf was used as medicine in 33 plants, root in 14, bark in 8 and fruits in 4 plants. The whole plant was used as a medicine in 20 plants. The types of the medicinal plants used were as follows; 17 herbs (most widely used), 14 trees, 7 climbers, 6 shrubs and 1 runner, 1 bulb, 1 moss and 1 grass. Among the plant part leaf is the most frequently used part (33) followed by whole plant (20), root (14), bark (8), fruit (4), flower (2) and bulb and latex one each.

DISCUSSION

Aristolochic acid from *Aristolochia* species (*Aristolochiaceae*) is reported to inactivate venom and reduce haemorrhage from snake bite - Russell viper. It inhibits phospholipases. It produces non-specific increase in immune response.[1] Though C*orallocarpus epigaeus* is widely employed by various tribes across India for snake bite and documented in many ethnobotanical studies for its anti-inflammatory, anti-fungal activities, antibacterial studies, no anti-venom studies have been extensively carried out. Though, *Enicostemma littorale* has been widely used in poisonous bites, it has not been studied for its anti-allergic or anti-venom activity; it has been studied for its hypoglycemic, hypolipidemic, hepatoprotective and immunomodulant activities.[2-3]

The medicinal plants used to treat animal poisons in the study area show recurrent use by multiple healers and also corresponds to ethnobotanical studies carried out by different researchers across the country.[4] However, even the most commonly used herbs have not been fully investigated for their anti-venom activities. With over 25,000 deaths occurring in India due to poisonous snake bites, it is essential to investigate the locally available and most widely used herbs.

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