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Research Article

MEDICINAL PLANTS USED BY THE THAKAR TRIBES OF RAIGAD DISTRICT, MAHARASHTRA FOR THE TREATMENT OF SNAKE-BITE AND SCORPION- BITE

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ABSTRACT:

An ethno-botanical survey was undertaken to collect information on the use of medicinal plants for the treatment of snake-bite and scorpion-bite of Thakar tribe in Raigad District, Maharashtra during 2005-2006. The indigenous knowledge of local traditional healers about the native plants used for medicinal purposes was collected through a questionnaire by personal interviews during field visits. A forest walk with the healers enabled plant collection and documentation relating to the remedial information of plants used against snake-bite and scorpion- bite. In the present investigation, 25 plant species, belonging to 23 different families used by the tribal people against snake-bite and scorpion-bite are documented. The study showed that the Thakar tribes of Raigad District still continue to depend on medicinal plants for the treatment of these bites. This wealth of traditional knowledge needs to be collected and preserved which may help to understand remedial plant metabolites for development of novel herbal medicines.

Key words: Medicinal plants, Scorpion-bite, Snakebite-bite, Thakar tribe, Raigad district

INTRODUCTION

Man has been dependent on plants for traditional medicines since time immemorial. This knowledge of medicinal plants has been accumulated in the course of several centuries, forming the basis of medicinal systems such as *Ayurveda*, *Unani* and *Siddha*. During the last few decades, an increasing interest in the study of traditional uses of medicinal plants has been witnessed in different parts of the world, mainly due to several problems associated with synthetic drugs and emergence of multi-drug resistant pathogens [1]. Additionally, the treatment of various diseases with indigenous medicinal plants generates considerable health and economic benefits. Traditional knowledge in this regard has been conserved for generations in different tribal communities in several parts of the

world and especially in Western *Ghats* of India which is considered as a treasure trove for such traditional medicines [2].

According to the data recorded in hospital of Medical Records Department of the Dr Shankarrao Chavan Government Medical College alone out of 488344 total patient admitted, 5718 patients were registered for snake bite [3]. and considerable number of cases may have remained unreported. Maximum cases are being reported from the rural areas where farmers are engaged in various farming activities. The modern method of snake-bite treatment requires sophisticated application of anti-venoms, and these remain mostly inaccessible to rural people. In addition to the transportation difficulties, rural people are unaware about these treatments and facilities. Instead, they rely on local time tested herbal remedies.

In the present study, a detailed ethno-medicinal survey was carried out in Raigad District of Maharashtra, India to gather information about the traditional medicines used to treat snake-bite and scorpion-bite in tribal populations, where people depend mostly on forest products for their basic daily needs [4].

MATERIALS AND METHODS

Study area: Raigad is a district in the Indian state of Maharashtra. It is located in the Konkan region. The district had a population of 2,207,929 of which 24.22% were urban as of 2001. The district is bounded by Mumbai Harbour to the northwest, Thane District to the north, Pune District to the east, Ratnagiri district to the south, and the Arabian Sea to the west (Figure 1). The district includes 15 talukas in which Thakar tribes reside [5].

Tribe: The size of tribal population in Maharashtra is 9.19 % of the total population according to 1991 census. Out of 20 major tribal communities in Maharashtra, 'Thakar' is one of the major tribes of Maharashtra and their habitations are spread in the remote areas of Raigad where population is dominant followed by Pune, Thane, Nasik and Ahmednagar districts (Figure 2) [6].

They are mainly dependent on forest and agricultural produce. Major occupations are collection of plant parts like fruit, edible tubers, gums, nuts, and leafy vegetables from forest. In hilly areas, agriculture is completely dependent on rainfall whereas, irrigated crops are also cultivated in plains.

Collection of information: Ethno-botanical information was collected from Thakar tribe of Raigad district during 2008-2010. Three seasonal visits were made to collect all plant specimens in flowering and/or fruiting condition. With prior consent form a well-designed questionnaire information pertaining to the medicinal applications, parts used, dosage and location of the plants were collected from elderly persons, tribal heads and local practitioners, called *Vaidu* and *Mukhia*. With the help of tribal heads, plant specimens and herbaria were prepared according to the methods explained by Jain & Rao [7]. All the plant specimens were identified using local flora [8] and their identity was confirmed with the help of qualified taxonomists. Specimens collected were deposited in herbaria of BSI, western circle, Pune.

RESULTS AND DISCUSSION

The survey showed that tribal people of study area use 15 plants species belonging to 14 families and 15 genera to treat snake-bite and 10 plants species belonging to 10 families and 10 genera to treat scorpion-bite (Table 1). Among reported plants five applications use roots or rhizome, two applications with stem, two applications using whole plant where as four with bark and only 2 applications with leaves are being used. Similarly, to treat scorpion bite, five applications use roots/tuber, three applications use leaves and one application each uses bark and seed. Strikingly, only Apocyanaceae family represents two genera which are used for treating both snake-bite and scorpion-bite. It is indeed amazing that although the tribes are living in isolation but they have uniform remedies to treat snake-bite and scorpion-bite during the period when communication was almost non-existant.

Remedies for snake-bite:

Either infusion of different plant parts or powder is given to consume or is applied on the wounded part. Paste or infusion of plants such as *Aegle marmelos, Cassytha filiformis, Commicarpus chinensis, Costus speciosus, Cuscuta reflexa, Cyphostemma auriculatum, Radermachera xylocarpa, Tinospora cordifolia* and *Bombax ceiba* (Figure 3) is applied on the spot of bite or given orally for 2-3 days for treating snake-bite (Table 1).

Remedies for scorpion-bite:

In the case of scorpion-bite, parts of plants such as *Bauhinia racemosa , Brassica juncea, Luffa acutangula* are squeezed and applied or chewed to reduce the pain (Table 1).

Unique treatment documented during field visit is that they treat snake-bite by application of latex of *Calotropis gigantea* in the nostrils till the person sneezed, indicting the reduction of poisonous effect. This method may have been a prelude to use inhalation mode for the treatment of *asthama* or emerging vaccines.

Plants used in other diseases:

Some of these plants are used for treating diverse ailments also. For example, *Aegle marmelos* is used as anti-uretic and *Tinospora cordifolia* for jaundice, fever and diabetes. Some plants are used to passify aches and pains, such as *Cuscuta reflexa* used for treating bone fracture, body pain, antifertility and as *a tonic; Costus speciosus* for headache, *Radermachera xylocarpa* for wound healing, *Cyphostemma auriculatum* for mouth boils etc. [9, 10, 11].

Path forward for molecular profiling and taxonomical scrutiny:

Plants reported in this survey can serve as a very useful treasure to treat snake-bites and scorpion- bites in different areas which lack primary health care centers. These plants are from diverse families and yet exhibited similar activity. This observation generates scientific curiosity regarding the mechanism of action of active ingredients which are same, similar or altogether different with same end effect. It would be in order to quantify rapid efficacy of these plants, organize them in the order of increasing efficacy and correlate them with their taxonomical status in plant kingdom. The nature must have systematically conserved certain genes in only certain families to treat poisons emanating from snake-bite and scorpion-bite. Shading the light on this information may unfold other mysteries of nature for the benefit of mankind.

CONCLUSION

Our study has revealed that large population of tribals in study area still totally depends on the traditional medicines for the treatment of several ailments. The survey has demonstrated that 25 plants are being used by tribal people for snake-bite and scorpion-bite. This treasure of traditional knowledge has wide applications, considering the large number of snake-bite cases reported each year in Maharashtra. However, due to lack of scientific documentation and validation, this traditional knowledge is at the verge of extinction. Considering that most of the medicines have originated from traditional knowledge, it has become imperative to preserve this knowledge for future generations. This study will prompt to explore the folk medicines and facilitate the discovery of new medicines, which is a need of the hour.

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Reference

1. Chellaiah M., Muniappen A., Nagappen R., Savarimuthu I. Medicinal plants used by traditional healers in Kancheepuram district of Tamil Nadu, India. Ethnobiol Ethnomed. 2006. 2: 43: [http://www.ethnobiomed.com/content/2/1/43]
2. Pokharkar RD., Saraswat RK., Kotkar S. Survey of plants having antifertility activity from Western Ghat area of Maharashtra State. Journal of Herbal Medicine and Toxicology. 2010. 4 (2) 71-75.
3. Inamdar IF., Aswar NR., Ubaidulla M., Dalvi SD. Snakebite: Admission at a tertiary health care centre in Maharashtra, India. South African medical journal. (2010). 100 (7) 456-458.
4. Jain SK., Tarafder CR. Native plant remedies for snakebite among *Adivasis* of Central India. Ind. med. J. 1973. 57:307-309.
5. Annonymous. Reviesed gazeteer of Raigad. 1964. (http://raigad.nic.in/DG/1964/people_religion.html)
6. Raigad District census. 2011. (http://www.census2011.co.in/district.php)
7. Jain SK., Rao RR. Field and Herbarium Methods. Today & Tomorrows Publication. 1976. New Delhi, India.
8. Singh NP., Karthikeyan S., Lakshminarasimha PV. Flora of Maharashtra State. Dicotyledons Vol -I, BSI. 2000. Calcutta, India.
9. Jain SK. Dictionary of Indian folk medicines and ethnobotany. Deep Publications. 1991. New Delhi, India.
10. Jain SK. Glimpses of Indian Ethnobotany. Oxford and IBH Publication. 1981. New Delhi, India.
11. Jain SK. Ethnobotanical research unfolds new vistas of traditional medicine. Glimpses of Etnnobotany. Oxford University press. 1981. Bombay, India. pp13-36.

Figure1.Map of study area

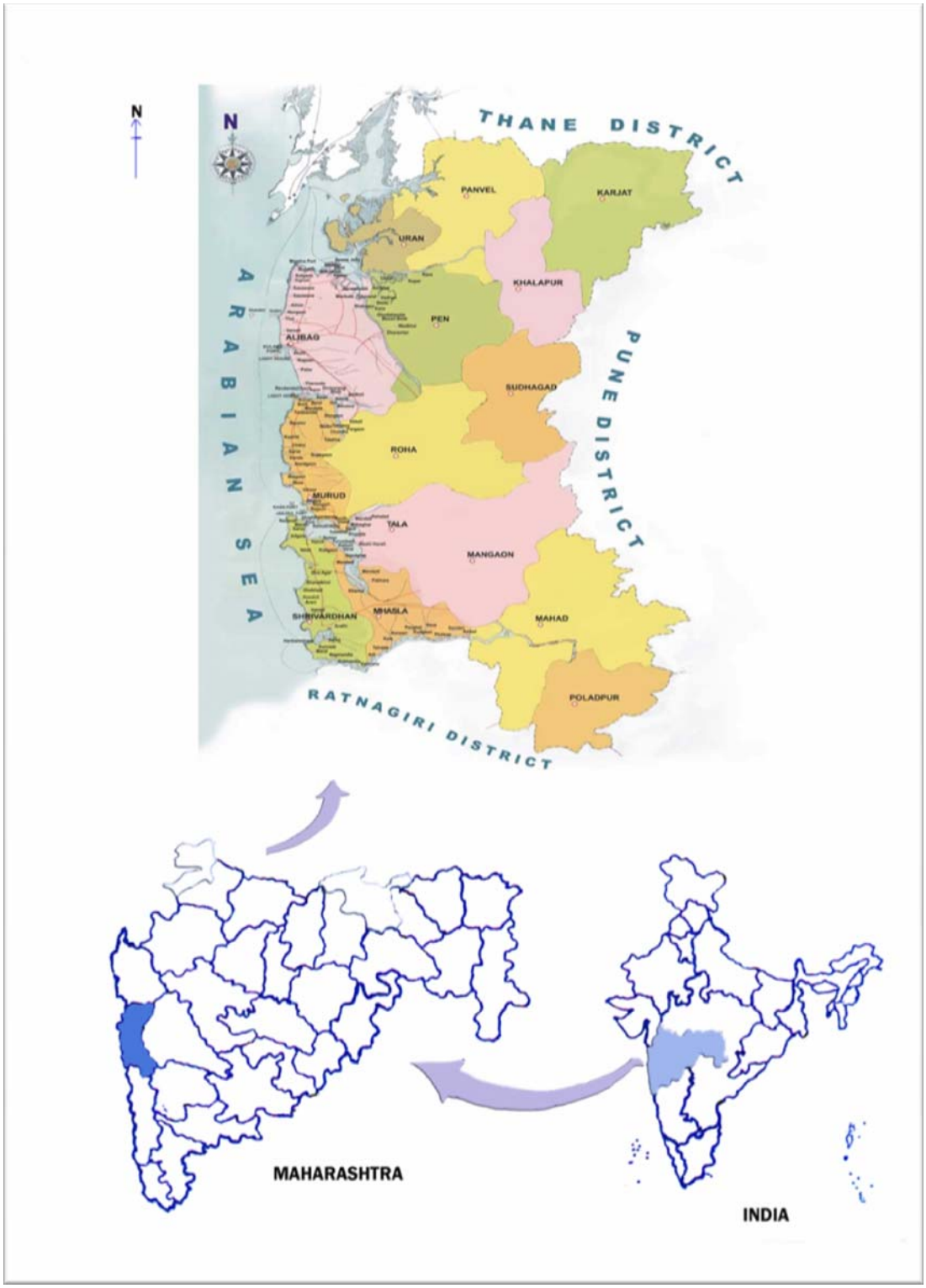

Figure 2. Thaker Tribe

Tribal village

Tribal hut of Thaker

Tribal family of Thaker

Thaker women carrying minor forest products

Thaker lady with 'Erale'

Device for storing food grains

Figure 3. Some plants used for the treatment of snake-bite

Aegle marmelos (L.) Corr.

Bauhinia racemosa Lamk

Bombax ceiba L.

Carissa congesta Wight

Calotropis gigantea (L.) Ait.

Cuscuta reflexa Roxb

Gloriosa superba L.

Tinospora cordiolia (Willd.) Hook. f. & Thomson

Table 1- List of medicinal plants use for snake-bite and scorpion- bite from North Western Maharashtra

Sr. no.	Botanical Name	Name		Family	Part used	Medicinal use
		Vernacular	English			
Snake bite						
1.	*Aegle marmelos* (L.) Corr.	*Bel*	Stone apple	Rutaceae	Leaves	Juice of the leaves is applied on the bitten part and squeezed leaves are eaten, which help to avoid nausea.
2.	*Ardisia solanacea* Roxb.	*Bugdi*	Shoebotten archision	Myrsinaceae	Bark	Bark is used for snake bite.
3.	*Balanites aegyptiaca* (L.) Del.	*Hingu*	Dessert Date	Balanitaceae	Bark	Bark paste is applied on snake bite spot.
4.	*Bombax ceiba* L.	*Kate savar*	Silk cotton tree	Bombacaceae	Leaves	Leaf paste is applied at the bitten spot in the case of snake bite.
5.	*Calotropis gigantea* (L.) Ait.	*Rui*	Shallow wart	Asclepiadaceae	Latex	Two - three drops of latex from crushed leaves put in the nose. It should be done till snake bitten fellow sneezes out. Sneezing indicates reduction in poisonous effect.
6.	*Cassytha filiformis* L.	*Amarvel*	Love vine	Lauraceae	Root	Infusion of aerial roots and pendulous branches is given once or twice only. Poisonous effect will be reduced slowly.
7.	*Commicarpus chinensis* (L).	*Dogadfodi*	Diffuse bogweed	Nyctaginaceae	Roots	Roots are pounded in water and one glass of it is given for drinking. Vomiting takes place which helps in reducing poisonous effect.

8.	*Costus speciosus* (Koenig) Sm.	*Pewa*	Bomma Kachjika	Zingiberaceae	Rhizome	Extract of rhizome is given in snakebite.
9.	*Cuscuta reflexa* Roxb.	*Amarvel*	Giant Doder	Cuscutaceae	Whole plant	To reduce the effect of poison, one teaspoonful infusion of powder of whole plant is given thrice a day.
10.	*Cyphostemma auriculatum* (Roxb.) Singh & Shetty	*Kali-vel*	Eared cyphostemmon	Vitaceae	Bark	5 gm bark is taken in one cupful of water and taken once a day for 7-8 days.
11.	*Gymnema sylvestre* (Retz.) R.Br.	*Pitani*	Pariploca of the wood	Asclepiadaceae	Root	The root powder is taken orally and also applied on the bitten spot to treat snake bite
12.	*Oxalis corniculata* L.	*Ambuti*	Oca	Oxalidaceae	Whole plant	Whole plant is crushed and paste is tied on the specific spot of bite, the juice is also drunk to remove the poison
13.	*Radermachera xylocarpa* (Roxb.) K. Schum.	*Kharsing*	Padri Tree	Bignoniaceae	Inner bark	Teaspoonful infusion of inner bark is given once a day for 5-7 days. It exports snake poison from the body.
14.	*Rauvolfia serpentine* (L.) Bth.	*Sarpagandha*	Rauwolfia	Apocynaceae	Root	The powder of roots used for snake bite
15.	*Tinospora cordifolia* (Willd) Miers ex Hook f.& Thoms	*Gulvel*	Heart leaf Moonseed	Menispermaceae	Stem	Two tablespoon powder of dried stem with lukewarm water is given once a day for 3-4 days.

Scorpion bite						
1.	*Abrus precatorius* L. Wall.	*Gulaganji*	Licorice	Fabaceae	Root	Root powder is taken orally along with cow's milk to treat sting.
2.	*Achyranthes aspera* L.	*Aghada*	Prickly chaff flower	Amaranthaceae	Root	Roots are crushed with 2 seeds of *Caesalpina cristata* (gatayan) and externally applied on sting part.
3.	*Bauhinia racemosa* Lamk.	*Apta*	Mountain ebony	Caesalpiniaceae	Leaves	Paste of fruit is applied on strung part. Also leaf juice is applied on stung part.
4.	*Brassica juncea* (L.) Czern. & Coss.	*Mohari*	Indian Mustard	Brassicaceae	Leaf & Stem	Little hot juice of leaf, stem and branches is applied on the stung part.
5.	*Carissa congesta* Wight.	*Karvand*	Christ's thorn	Apocynaceae	Root	A piece of root is kept on molar tooth, chewed and its remnant is applied on stung part.
6.	*Cyperus rotundus* L.	*Motha*	Nut grass	Cyperaceae	Tuber	Paste of dried tuber is applied on bitten site.
7.	*Gloriosa superba* L.	*Kar lavi*	Malabar glory lilly	Liliaceae	Roots	Root paste is applied on the bitten spot.
8.	*Luffa acutangula* (L.) Roxb.	*Kadu-dodka*	Ribbed Sponge gourd	Cucurbitaceae	Leaves	Juice of the leaf is applied on the stung part.
9.	*Madhuca latifolia* Roxb.	*Mahua*	Mowra butter tree	Sapotaceae	Bark	Dried fruits with leaves of *Ipomea stramonium* (besharam) made into paste and applied on sting part.
10.	*Martynia annua* L.	*Vichucha jhar*	Tiger claw	Martyniaceae	Seed	Seeds about 5 gm, soaked in water and made paste, applied 2-3 times externally on affected area.