



Review Article

TRADITIONAL HERBS USED FOR SNAKE BITES AMONG HILL TRIBES OF TAMIL NADU - LITERATURE REVIEW

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ABSTRACT

Mortality due to Snakebites occurs in South Asian countries in highest ratio, particularly in India. Giving primary care in initial stages is very crucial.[1] In India, Tribals' save themselves using traditional medicines for many centuries including poisonous bites.[2] Tribals' of Tamilnadu identify and preserve herbals from ancient times². Literatures (Four) were identified and reviewed for ethnomedicine used among tribals of Tamilnadu for snakebites during 1990 to 2014. Among hill tribes (Palliyar, Irular and Malayali) 18 plants were identified for treating snakebites either individually or as a combination drugs. These herbs were advised with food restrictions. Literatures on ethnomedicine by Tamilnadu tribals need to be documented. We recommend training the health care units in tribal areas on knowledge of ethnomedicine in case of emergency including snake bites to save lives.

KEYWORDS: Snake bites, hill tribes.

INTRODUCTION

A study reported that nearly 20,000 deaths occur worldwide each year due to snakebite. And it mostly occurs in Sub-Saharan Africa and Asia.[1] Highest ratio of snakebites occurs in South Asia, particularly in India.[2] More than 2.5 lakh cases of snake-bites were reported; in which 46000 die due to snake-bites every year.[3] Hence snakebite has become an important and serious medicolegal problem in India.[2] Snakebites usually are referred to government hospitals and community health centers from rural areas in

India by clinics, PHC, and including private hospitals.[4] So giving primary treatment in initial stages becomes very crucial.

Ethnic medicines (Traditional medicines) are a systematized and analyzed traditional knowledge of folk healing in its own way and passed from generations.[5,6] The bio-diversity in India have provided cure for ailments of mankind through herbal medicines. 'Traditional medicines' are still a primary source of medication among 3/4th population in developing countries.[7-10] Tribal's health in India has been preserved by these traditional medicines from poisonous bites for many centuries.[2]



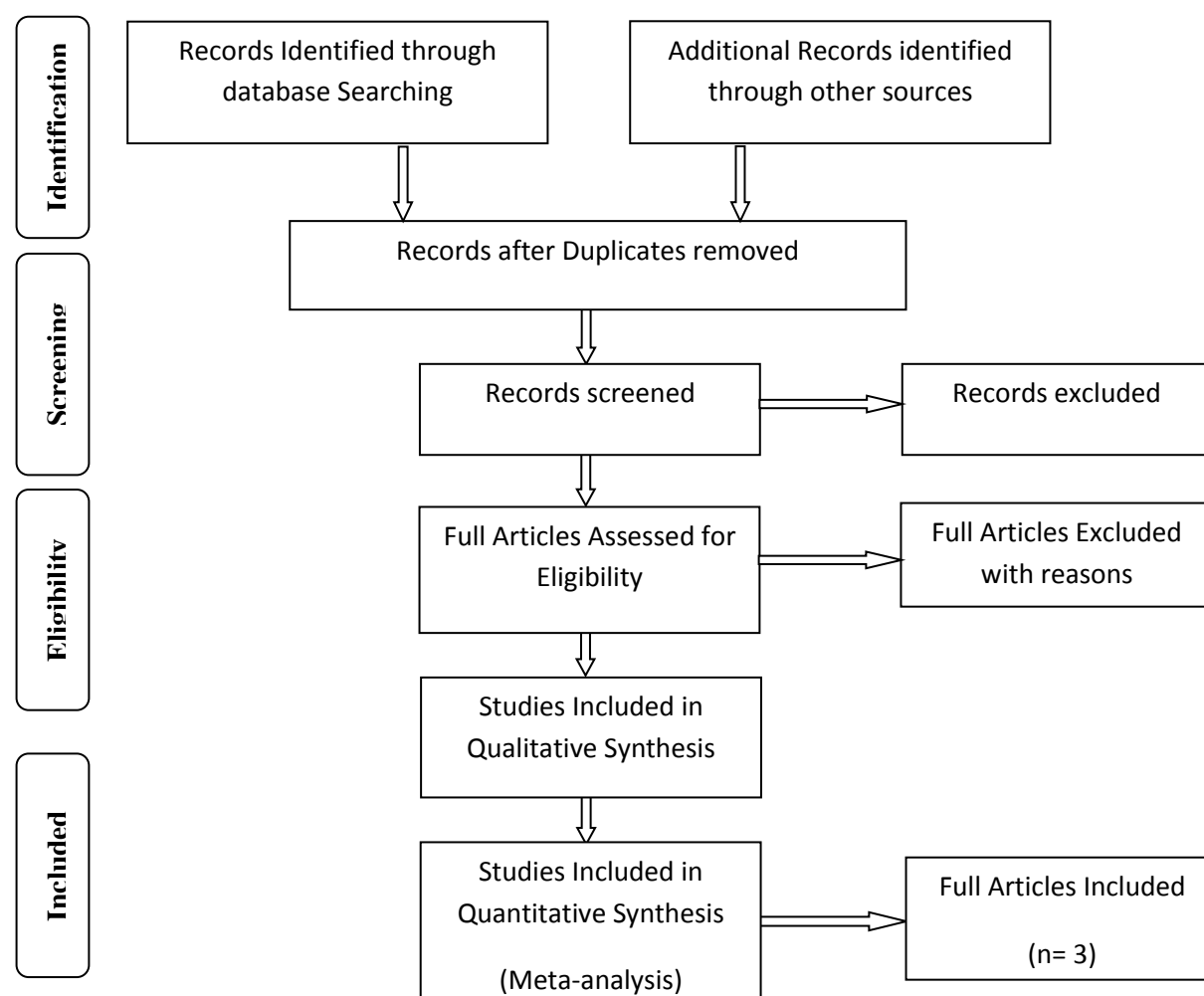
The geographical locations and biodiversity of these hill tribes suggest that they live alongside the natural wildlife and reserve forests. Reported snakebites at PHC's were three times less than the actual number; many cases were not reported from the tribals.[2] It is unknown for generations that snakebites were treated by tribals with ethnic herbals.[4] These treatments were more common among hill tribes in Tamilnadu. Even though these treatments are in practice by tribals for generations they were not documented till now. Only few researchers have documented traditional treatment methods of tribal population in past two decades.[11-14] Literatures were reviewed with an objective to identify the documented treatment strategies among the hill tribals of Tamilnadu.

METHODS

Ethno-medicines' and 'tribals' were selected as keywords for literature search. We found thirty six studies from both published (articles) and unpublished(PhD thesis) sources. These studies were done during the period of 1990 to 2014. As the data was secondary, the source of information

on ethno medicines were richly found among PhD dissertation theses from many universities in India. These dissertation theses were selected from 'Shodh ganga' website using keywords. And we searched articles in internet among Pubmed and other Journals websites. The data regarding Ethno-medicines of tribal population in Tamilnadu was included. The Quantitative data was selected from the Figure 1 available data regarding treatment of Snakebites. The literatures among tribals of other states and other than tribals on ethno-medicines were excluded. The data of ethno-botanical medicines used among tribal populations in Tamilnadu was compiled from 9 studies. Out of NINE studies, FOUR studies were unpublished dissertation work and among those THREE were published as article, reported ethnomedicinal treatment for snakebites. These studies explained the usage of herbals and treatment method related to snakebites. The quantitative data such as treatment mode, parts used, mode of preparation etc., was collected using Atlas.ti qualitative software for analysis. Literature review process is explained in the figure 1.

Figure 1: Flow Chart showing the Process of Literature Review; A Literature Review of Ethno-medicines used among Tribal Population in Tamil Nadu (2017)



RESULTS AND DISCUSSION

Four studies reported the treatment methods of tribals including snake bites. These studies were carried out during the period of 2007 to 2014. All the studies followed a similar pattern of collecting information of different species using a structured questionnaire among the healers and the elders in the tribal villages. The data was confirmed through two or more respondents of those tribes. Irular, Malayali, and Palliyar's were the three hill tribes to explain treatment for snakebite from 4 studies. Among three tribes, i.e., Palliyar, Irular and Malayali dwell in deep forests, hill and foot hill areas. With regarding to socioeconomic conditions Palliyar and Irular tribes were considered lower than Malayalis tribe. Study areas of the literatures were explained below (table 1).

Literature review of ethno-medicines has revealed that 18 herbal medicines have been reported 22 times among the three tribes for snakebite. These herbals belong to Alangiaceae, Mimosaceae, Acanthaceae (4), Araceae, Aristolochiaceae, Asclepiadaceae, Cucurbitaceae, Loranthaceae, Gentianaceae, Apocynaceae (3), Lamiaceae, Musaceae, and Rutaceae. These vegetative plants were herbs (9), trees (4), climbers (3) and shrubs (2). Most of these plants leaves (11) followed by root (6) were used either as a paste or decoction orally. It was also reported that 8 herbals have been widely used by Ayurveda and Siddha treatment for varied reasons. Following herbals were reported commonly, *Aristolochia indica* L., *Leucas aspera*, and *Andrographis paniculata* (Table 2).

Review proclaims that, Tamilnadu hill tribes (Palliyar, Malayali, and Irular) have diverse cultures including their medicinal preparations. Among hills of Tamilnadu, Even with emergence of modern medicines, for treatment among tribals of Tamilnadu, ethnomedicine were primary care in saving lives including snakebites. Two studies revealed maximum herbs for snakebites among the Palliyar and Malayalis' (Maruthapandian *et al* and Sekar *et al*). Though Irulars were good in catching snakes; knowledge on treating snakebite revealed only two drugs. Tribes of Irular and Malayali consider *Andrographis paniculata* as an important medicine. And *Aristolochia indica* L. were considered important for both topically and orally by Palliyar and Malayali tribes.

Irular and Palliyar tribe use the medicines individually both orally and Locally. Palliyars consume few herbs along with honey. *Andrographis paniculata* leaves were taken individually by Irular tribe; whereas Malayali tribe mixes the leaves with rhizome of *Dioscorea oppositifolia* to make a paste and take orally. Malayali tribes mostly make the medicine by mixing it with other herbs or natural products and

consume orally. Similarly they consume orally the paste of fresh tuber of *Corallocarpus epigaeus*, and watery sap of *Musa paradisiaca*. Leaves of *Ichnocarpus frutescens* and root of *Rauvolfia serpentina* is made as a paste and consumed orally. Also roots of *Rauvolfia serpentina* and watery sap of *Musa paradisiaca* were mixed as a paste and taken orally. Whereas a paste is made using goats milk or urine of opposite sex and fresh tuber of *Arisaema leschenaultii* were also used for treatment. We found that food restrictions were strictly followed to save the lives during these treatment; such as avoiding oil, fish, eggs, tamarind, and spices were advised for patients. We were only able to identify old literatures on snakebites and ethnomedicine. Recent literatures among Tamilnadu hill tribes on ethnomedicine were less.



Table 1: Area profile of the studies used for Ethnomedicinal knowledge of Tribals in Tamilnadu; Traditional use of herbals for snake bites among Tribals in Tamil Nadu - A Literature Review (2017)

Title	Year	Author	Journal/ Univ	District	Village /Hill	# of Informants	Latitude	Longitude
Traditional Knowledge on Medicinal Plants Used by the Irula Tribe of Hasanur Hills, Erode District, Tamil Nadu, India	2010	<i>P. Revathi</i>	Ethnobotanical Leaflets	Erode District	Hasanur Hills	23	11°40'16" N	77°3'42" E
An Ethnobotanical Study of Medicinal plants used by the paliyars aboriginal community in Virudhunagar district, Tamil Nadu, India,	2014	<i>Mchalingam</i>	Indian Journal of Traditional Knowledge	Virudhunagar district	Nedunkulam, Shenbagathoppu, Ram Nagar, Iyyanar falls, and Thaniparai	43	9°44' N	77°79' E
Ethnobotanical studies of Bodhahills tribes (Malayalis) in Eastern Ghats, South India	2007	<i>K Sekar</i>	Manonmaniam Sundaranar University	Salem and Namakkal District	Melur, Kizhur, Kurinjiyur, Kadamalai and Naduvalavu	2	11°10' to 11°20' N	77° 80' to 77° 90' E

Ethnomedicinal plants used by Palliyars in Sirumalai hills, Western Ghats, Tamil Nadu for the treatment of various poisonous bites	2012	Maruthupandiyan	International Journal of Current Trends in Research	Dindigul District	Ooradi, Madagamalai, Ponnuruvi, Kannadiparai and Talaikadu	NA	10°19 N	78°.12 E
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Table 2: Ethnomedicines used for snakebites by the tribals; Traditional use of herbals for snake bites among Tribals in Tamil Nadu - A Literature Review (2017)

S. No	Botanical Name	Family Name	Vernacular Name	Tribe	Ethnomedicinal usage (mode, preparation, and precautions)
1.	<i>Alangium salvifolium</i> (L.f.) Wang in. Pfreich.	Alangiaceae	Alangi	Palliyar	One teaspoon of the root bark powder is taken orally twice a day for two days as an antidote for snake bite
2.	<i>Albizia lebbek</i> L. Willd	Mimosaceae	Vagai	Palliyar	One teaspoon of the flower powder is taken orally with hot water thrice a day for three days as an antidote for snake bite.
3.	<i>Andrographis alata</i> (Vahl) Nees.	Acanthaceae	Periyaanangai	Malayali	One handful of leaves is made into a paste by adding a little amount of watery sap from the banana stem (<i>Musa paradisiaca</i>) and is taken orally thrice a day for the treatment of snake bite till it gets cured. <i>Oil and fish food should be avoided during the treatment.</i>
4.	<i>Andrographis paniculata</i> (Burm.f) Wall.ex Nees	Acanthaceae	Periaa nangai/ Nilavembu siriyangai	Irular, Malayali	Irular:- Leaf paste is taken orally for snake bite. Malayalis:- Paste made from one handful of leaves and 2-5g of rhizome of <i>Dioscorea oppositifolia</i> is taken orally thrice a day for snake bite till it gets cured. <i>Oil/spice/ fishes, egg should be avoided.</i>
5.	<i>Arisaema leschenaultii</i> Blume	Araceae	Kollan kovai	Malayali	5-10 g of fresh tuber made into a paste is taken immediately along with <i>goat's milk</i> thrice a day for curing snake bites. If goat's milk is not available, urine can be used as substitute. <i>Note: female urine for male patient and male urine preferably male child urine for female patient can be used.</i>
6.	<i>Aristolochia indica</i> L.	Aristolochiaceae	Perumaruthukodi / Thalaisuruli/ Iswharamooli	Palliyar and Malayali	Palliyars: An ounce of hot water extract of the roots is taken orally thrice a day for two to three days as an antidote for snake bite. The fresh leaves are crushed and used as a bandage over snake bite. <i>Decoction of root is toxic and so a handful of root is prepared with milk</i>

					<i>is taken internally twice a day with honey against snake bite.</i> Malayalis: 10-20g of root paste is taken orally thrice a day for quick relief of snake and other poisonous bites till cured.
7.	<i>Calotropis gigantea (L.) R. Br.</i>	Asclepiadaceae	Erukku	Palliyar	The tender leaves are chewed as an antidote for snake bite. Gently heated mass of crushed tender leaves is used as a bandage over scorpion sting.
8.	<i>Corallocarpus epigaeus (Rottl & Willd) Clarke</i>	Cucurbitaceae	Karudan kizhanghu	Malayali	10-20g of fresh tuber made into paste along with watery sap of banana stem (<i>Musa paradisiaca</i>) is taken immediately for the treatment of the snake bite.
9.	<i>Dendrophthoe falcata (L. F) Etting</i>	Loranthaceae	Pulluruvi	Malayali	One handful of leaves is made into a paste along with watery sap of banana and is given immediately after snake bite till it cures. <i>Diet food with no salt, tamarind is recommended. Egg and fish should be strictly avoided.</i>
10.	<i>Dipteracanthus prostratus (Poir.) Nees.</i>	Acanthaceae	Pottakanchi	Palliyar	An ounce of the whole plant juice is taken twice a day for two to three days as an antidote for snake bite.
11.	<i>Enicostemma axillare (Lam.) Raynal</i>	Gentianaceae	Vellarugu	Malayali	One handful of leaves made into a paste boiled with water is immediately taken for the treatment of snake till it cures.
12.	<i>Ichnocarpus frutescens (L.) R.Br.</i>	Apocynaceae	Paalaikodi	Malayali	Leaf paste and root paste in equal ratios mixed with root paste of <i>Rauvolfia serpentina</i> is applied externally on the spot of snakebite.
13.	<i>Leucas aspera (Willd) Spreng.</i>	Lamiaceae	Thumbai/ Kennathumbai	Irular/ Palliyar	<u>Irular:</u> Leaf paste or crushed leaf is taken both externally & internally to treat snake bite. <u>Palliyar:</u> An ounce of the leaf extract is taken with honey as an antidote for snake bite.
14.	<i>Musa paradisiaca L.</i>	Musaceae	Vaazhai	Malayali	Watery sap collected from the stem is given immediately to the patient and the patient made to lie on banana leaf without sleep to arrest the poisonous effect of snake venom after bite.
15.	<i>Rauvolfia serpentina (L.) Benth. ex Kurz</i>	Apocynaceae	Sarppakandhi	Malayali	Root paste made from one handful of root mixed with watery sap of banana stem (<i>Musa paradisiaca</i>) is taken orally for snake bite.
16.	<i>Rauvolfia tetraphylla L.</i>	Apocynaceae	Paambukala	Malayali	1-2 g of root bark powder is boiled with water and the filtered decoction is taken immediately for the treatment of snake and other poisonous bite till it cures. <i>Fish, eggs, tamarind and oily food should be strictly avoided during the treatment.</i>
17.	<i>Rhinacanthus nasutus (L.) Kurz.</i>	Acanthaceae	Nagamalli	Palliyar	A handful of fresh leaves or roots are chewed as an antidote for snake bite.
18.	<i>Ruta chalepensis L.</i>	Rutaceae	Arubhadhaam pachilai	Malayali	One handful of leaves made into a paste is given immediately for snake bite or any other poisonous bite till cured. <i>If the patient feels spicy taste of pepper, it shows the patient is normal otherwise the treatment will be extended furthermore. Only liquid food should be taken during the treatment.</i>

CONCLUSION

This review was carried out with an intention to save lives due to poisonous snakebites. More literatures on ethnomedicine treatment by Tamilnadu tribals need to be documented including snakebites, being a major health issue in wildlife reserves and hills. We recommend training the health care units in tribal areas on knowledge of ethnomedicine for various treatments including snakebites in case of emergency as a first aid to save lives is necessary.

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