

Research Paper

Socioeconomic status and survey of ethno medicinal plants used by the snake charmers of Bankura District, West Bengal, India.

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Abstract

The present work is an attempt to understand the socio economic status of snake charmer and document the traditional uses of neglected plants as medicine in domestic livelihood system against many diseases. The survey was carried out among snake charmer of Kamladanga village of Bankura District, West Bengal, India during November 2015 to January, 2016. A total of 54 individuals (18-70years) were interviewed during the survey including snake charmers' wives. Due to governmental support and help, socioeconomic status of snake charmer's is slightly improved as a result of shifting from their traditional profession to other professions. A total of twelve (12) poisonous and non poisonous snake and 20 local plants from 12 families were documented. Due to increase in modern healthcare facilities and awareness, traditional ethno medicinal treatment decreases rapidly. So proper documentation of such unique and indigenous, traditional knowledge is necessary before it lost forever.

Keywords: socio economic, snake charmer, poisonous, ethno medicinal, indigenous, medicine

1 Introduction

Snakes are the most misunderstood and universally disliked animals in the world since times immemorial. They are terrestrial, aquatic, marine or amphibious in nature and found in dense forest as well as near human habitation like in homes, gardens, store rooms and in many cracks and crevices. They usually prey upon unwanted insects, toads, rodents in our store houses as well as small fishes in our ponds. Usually more than

3000 poisonous and non poisonous species of snakes are found in the world which are predatory carnivores in nature with wide range of prey species (**WHO, 2010; Bijeess, 2012**). Due to living in close contact with human, sometimes snake bites human and other vertebrates which are the main health problem in the tropical countries including India. Although bite of poisonous snake is sometimes fatal in nature but most of the snakes are harmless and beneficial. Most of our fears arise due to ignorance and baseless superstitions. The actual incidence of snakebites is very difficult to assess because in rural areas it is not properly documented. There are approximately 1.2 million and 5.5 million snakebites occurs worldwide each year, with 421,000-1,841,000 envenomations and 20,000 - 94,000 deaths (**Harshavardhana et al.,2014**). In India alone more than 200,000 cases are reported and an estimated 35,000 to 50,000 people die each year (**Bawaskar,2004**). Previously snakebite patient's families mostly rely on snake charmers and their traditional medicinal plant treatment both in rural areas and urban areas but now the situation is slightly changing and both rural and urban people depend on modern medicinal treatment. Majority of the snake bite incidences occurred during the monsoons and during day time because most of the rural people heavily depend on cultivation. Forest plays an important role in enhancing livelihood requirements for rural community and in maintaining ecological balance. Their livelihood highly depends on utilizing timber as well as non-timber forest products (NTFPs) for various purposes, e.g. medicine, food, economic and other socio-religious purposes (**Saha and Sengupta,2014**). So villagers residing near forest enter forest for collecting wood, dry leaves for their cooking During this collection both male and female are suffered by snake bite and due to lack of proper communication and hospital facility they may lost their lives.

In Bankura district many rural people use snake charming as their profession and it continues generation after generation. They usually resides in a separate patches and in an isolated group in many villages of this District. They earn money by showing poisonous snakes door to door in nearby town and also sell many plants and animal parts as medicine against many diseases and also for snake bite patients. They also help people by catching snakes appeared in domestic houses. They collect various plant parts from nearby forest which they learnt from generation after generation. Since ancient times ethno medicinal plants have been used for treatment

of many diseases including snakebite. Plants are usually used due to its abundant availability, safety and effectiveness to diseases. Parts of Plants are used either single or in combination with other material, as antidotes for snake venom by rural people of India and many parts of the world (**Perumal et al.,2008; Sarkhel,2013**). The phytochemicals isolated from plants are not only used in traditional treatment but also has an immense importance as raw materials for preparation of modern medicine (**Sarkhel,2013**). According to WHO such traditional medicines are the practice, knowledge and belief system which transmit generation after generation by using plants parts, minerals and animal body parts to prevent or cure diseases, not only of man but other animals also (**WHO, 2003**). Although survey on several ethno medicinal plants have been carried in different parts of the world to explore the herbal treatment against snake bite and other diseases (**Mukherjee and Namahata,1988; Namahata and Mukherjee,1989; Ghosh,2003; Ghosh, 2008**). But there are very little documentation on ethno medicinal plant carried out in Bankura which is used for the treatment of snakebite and other medical purposes. So the present study was conducted to document the recent socioeconomic status and traditional knowledge of the snake charmers of Bankura District for treatment against snakebite through medicinal plants.

2. Study area

Bankura district, situated in the western part of West Bengal, is actually the fag-end of the Chhotonagpur plateau and enriched with the wealth of forest (Recorded forest area of 21.53%, State Forest Report, 2006-07, Govt. of West Bengal) covering Jaypur, Ranibandh, Bishnupur, Taldangra block etc. This region is characterized by laterite and alluvium soil but in extreme western side consists of metamorphic or gneissose rocks. The total average rainfall is 1,400 millimeters (55 in), the bulk of the rain coming in the months of June to September. Total area of the village is about 44.00 hector. As per 2011 census of India this village is inhabited by 56 families. The total population of the village is only 279 of which male and female are 142 and 137 respectively. So the ratio of male to female is almost equal. The literacy rate is about 73.11% with 57.36% males and 42.64% females are literate. The people here are very poor, 94 persons work as agricultural laborers.

Non workers mainly comprises of female and children but 38.73% males are also non worker. The area is mainly dry and arid. with very less agricultural lands. Agriculture in this area is mainly dependent on monsoon rain. The greater portion of the district consists of a rolling country covered by laterite and alluvium. While metamorphic or gneissose rocks are found to the extreme west, to the east there is a wide plain of recent alluvium. Strong massive runs of hornblendic varieties stretch across the region in tolerably continuous lines, the general strike being nearly east and west.

3. Material and Methods

Field investigations were conducted during November 2015 to January, 2016 in " Kamladanga" village of Bankura district, West Bengal. In this village more than 70 snake charmers' families lived. Most of them depend on this profession although during monsoon season most of the snake charmers' family members temporarily shifted to nearby district for extra earn as an agricultural labour in the rice field. A total of 54 individuals (18-70years) were interviewed during the survey including snake charmers' wives. During Interview their socioeconomic status , daily average income, causes of shifting to other profession, educational level, available governmental facility, proper knowledge about symptoms of snake bite, treatment facility and traditional treatment procedure were asked. Diversity of local snake population, their rearing methods, local plants names, plants parts used in treatment for snake bite, preparatory methods and mode of administration of these plants were also recorded (Martin,1995).

4. Results and Discussion

A total of 54 respondents from Kamladanga village were involved in this study. From this study it was observed that majority of the respondents (40.74%) were aged between 26 and 45 years. It was also noted that only 37.03% have received primary school level education and majority of the respondents (48.14%) had not received any formal education (Table 1).

Among all, most of the respondent select snake charming as a profession, other profession is agricultural labour. Rickshaw puller and Mahatma Gandhi National Rural Employment Guarantee (MGNREGA) scheme worker (100 days work) or other (Figure 1). During rainy season most of the respondent shifted their profession from snake charming to agricultural labour for earning extra money. For this reason many families shifted to new area for two to three months along with all family members. From our observation it is observed that members of age ranges 18-25 years shifted from their family profession of snake charming to other profession like rickshaw puller or as labour. The reason behind this is that, now a day's daily income of snake charmers decreases and they feel shame to beg door to door. Other reason behind this is the increase in opportunity to work under MGNREGA scheme. Female members also work under this scheme so family income increases gradually.

For answering the reason behind selecting snake charming as a profession, most of the respondent said (52%) they do it generation after generation as it is a traditional profession. 22% said they have no better opportunity, 11% said they like the profession very much and interestingly 15% said they don't know anything else (Figure 2).

Snake charmers caught both poisonous and non poisonous snakes. They collect these snakes from nearby jungle, paddy field, Sometimes from nearby town's domestic house and earn some extra money. Interestingly female members also able to catch snake during their collection of dry wood in jungle by the help of wooden stick and carry it in their house. They usually caught a total of twelve (12) poisonous and non poisonous snakes (Table 2). For snake charming they usually use poisonous snake and store them in a basket made of bamboo stick. Feed them once a day with fish, toad and sometimes rat. But due to excessive use of pesticide in the rice fields, toad, fish and other food sources remains reduced so both rearing catching of snake is reduced, they break the fang several times and pour the venom in the ground. It is done several times in a year at intervals. On the onset of monsoon season or during the time of 'Makhal', a local festival, they release all the snakes in nearby jungles and caught them after rainy season is over.

By answering the question of preference of snake during snake charming, 78% of the respondent prefer common cobra (*Naja naja*) because of its attractive colour, fang and hood. Children and other household members like this very much. but very few like viper and python during snake charming although it is easily available in this district. Only 11% select Krait during snake charming. They usually not prefer viper and Krait because of its aggressive nature (Figure 3).

The present study reports 20 local plants from 12 families traditionally used generation after generation for treating various diseases including treatment of snakebite by the snake charmers of Bankura district West Bengal. Although few tree parts are not properly identified because of local name and failure of collection of such plant parts from their surroundings. Similar type of reports of 20 ethnomedicinal plants from 16 families were reported against snakebite by the tribal population of *Paschim Medinipur* district West Bengal (Sarkhel,2014). In Bankura district also some documentation related to ethno veterinary uses of medicinal plants (Mondal and Biswas ,2012) and Ethno-medicinal Plants of Family Lamiaceae(Sinhababu and Banerjee, 2013) have been carried out. Similarly medicinal plants used by the tribals of Natungram village (Mallick and Mallick, 2012) and tribals of Ratanpur village of Bankura district also carried out(Mallick *et al.*,2012). For urinary ailments some medicinal plants also documented from this district (Acharya and Mukherjee ,2010).

The plants have been listed according to their scientific name, Vernacular name, family, Plant parts used and mode of preparation and medicinal uses (Table 3). They usually used different parts of a plant like leaf, rhizome, root, stem, fruit, seed and latex of these plants as antidote against snakebite and other diseases (Sarkhel,2013). Some of these plants like *Leucaena leucocephala* (Lamarck) de Wit (Bandyopadhyay,2002), *Acalypha indica* Linnaeus, *Achyranthes aspera* Linnaeus (Siddique and Hussain,1990), *Acorus calamus* Linnaeus, *Aerva lanata* Linnaeus (Perumal *et al.*, 2008) have been earlier reported to have anti snake venom activity in various ethno medicinal studies. In Indian tradition, some plants are supplemented with pepper and garlic for snakebite patient regarding the herbal antagonists of snakebite (Basha and Sudarsanam, 2012). Snake charmer earn some extra money by selling various plant parts against snake bite patient and also in other

types of diseases in door to door.(Table 3). Older age group snake charmer sometimes treat snakebite patient with ethno medicinal plants but now a day's most of the snakebite patient of this district avail hospital medical facility rather than to go to a snake charmer. From our study it is also observed that faith on traditional treatment through plants against snake bite people increases with older age group snake charmers and decreases rapidly with young age group snake charmers (Figure- 4).

5. Conclusion

Snakebite remains a public health hazard in tropical countries especially in India. In rural area many person experienced such deadly incidences. Due to lack of modern healthcare facilities in rural areas, most of the rural people rely on ethnomedicinal plants for their treatment. For this reason many death incidents occur in recent past. Now people are more aware about the threats of snakebite patient's .So dependency on ethno medicinal plants decreases rapidly. So such type of treatment also decreases rapidly due to improper documentation, natural resources as well as traditional knowledge and cultures are depleting rapidly at an alarming rate. For conserving such type of knowledge, this type of study will attract the attention of ethno botanists, pharmacologists and phytochemists for further critical investigation of ethno medical plants present in the districts of West Bengal, India. Due to increase in governmental facilities and schemes, the socioeconomic status of snake charmers has improved. So they are shifting from their traditional profession causing loss of many indigenous knowledge related to snakes and traditional medicine in near future. So proper documentation of such skill is necessary. The snake charmer should be recognized as 'barefoot conservation educators' by Govt. or other non govt. sector. This recognition will not only help to protect their culture and identity but also help to protect thousands of snakes to be killed through ignorance.

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References:

- Acharya, J., and Mukherjee, A. (2010) Herbal therapy for urinary ailments as documented from Bankura diatrict (West Bengal). *Indian J. Sci. Res.*, 1 (1) ,67-69.
- Bandyopadhyay, A., (2002) Traditional knowledge in utilizing plant biodiversity for snake bite. *Proc. Natl. Sem. ISM & H. R. K. Ashrama*, 25 - 27 December, Narendrapur
- Basha ,SK.,and Sudarsanam, G. (2012)Traditional use of plants against snakebite in Sugali tribes of Yerramalais of Kurnool district, Andhra Pradesh, India. *Asian Pac J Trop Biomed* , 2 (2), S575-S579.
- Bawaskar, H.S.(2004) Snake venoms and antivenoms: critical supply issues. *Journal Association Physicians India*,52,11-13.
- Bijees, K.B. (2012) A study to evaluate the effectiveness of structured teaching programme on management of snake bite among staff nurses at selected hospitals in Bangalore,Karnataka. *MSc. Dissertation, Rajiv Gandhi University of Health Sciences*, Bangalore,Karnataka, 189.
- Ghosh, A.,(2003) Herbal folk remedies of Bankura and Medinipur districts, West Bengal. *Indian Journal of Traditional Knowledge*, 2(4), 393-396.
- Ghosh, A.,(2008) Ethnomedicinal plants used in West Rarh regions of West Bengal. *Natural Products Radiance*, 7(5), 461-465.

- Harshavardhana, H.S., Pasha I., Srinivasa Prabhu N.C., Amira and Ravi P.(2014) Snake Bite Induced Coagulopathy: A Study of Clinical Profile and Predictors of Poor Outcome. *International Journal of Scientific Study*, 2(1), 2-5.
- Mallick, H., and Mallick, SK. (2012)., Medicinal plants used by the tribals of Natungram village district Bankura, West Bengal. *International Journal of Basic and Applied Sciences*, 1 (2),131-133.
- Mallick, S.K., Banerjee, P., and Saha, A.(2012) Medicinal plants used by the tribals of Ratanpur village of Bankura, West Bengal. *International Journal of life sciences*, 1 (2) 82-86 .
- Martin, G. J.,(1995) *Ethnobotany: A Methods Manual*. People and plants conservation manual (Chapman and Hall, London).
- Mondal, T., and Biswas, S. (2012) Ethnoveterinary uses of some medicinal plants of Bankura district, West Bengal. *Life Sciences Leaflets*, 5, 47-49.
- Mukherjee, A., and Namahata, D. (1988) Herbal veterinary medicine as practiced by the tribals of Bankura districts. *Journal of Bengal Natural Hist. Soc*, 7(1), 69-71.
- Namahata, D., and Mukherjee A. (1989) Some common practices of herbal medicines in Bankura district, West Bengal. *Indian Journal of Forestry*, 12(4), 318-321.
- Perumal,S.R., Maung,T.M., Gopalakrishnakone,P., and Ignacimuthu, S. (2008) Ethnobotanical survey of folk plants for the treatment of snakebites in Southern part of Tamilnadu, India. *Journal of Ethnopharmacology*, 115, 302-312.

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Saha, M., and Sengupta, S.(2014). Symbiotic Relationship between Forest and Tribe: A Case Study of Santal Tribe of Jaypur Forest, Bankura District, West Bengal, India. *Transactions*, 36 (2),235-246.

Sarkhel, S.(2013) Plants used in treatment of snakebite by the tribal communities of Paschim Medinipur district, West Bengal. *Int. J. of Pharm. & Life Sci*, 4 (12), 3172-3177.

Sarkhel, S., (2014) Ethnobotanical survey of folklore plants used in treatment of snakebite in Paschim Medinipur district, West Bengal. *Asian Pac J Trop Biomed* , 4 (5), 416-420.

Siddiqui, M. B., and Hussain, W.(1990) Traditional antidote of snake poison in Northern India. *Fitoterapia*, 61 (1), 41 -44.

Sinhababu, A., and Banerjee ,A.(2013)Documentation of Some Ethno-medicinal Plants of Family Lamiaceae in Bankura District, West Bengal, India. *Int. Res. J. Biological Sci.* 2 (6), 63-65.

WHO (2003).Traditional Medicine. *Fact Sheet No134*.

WHO. (2010) Guidelines for the prevention and clinical management of snakebite in Africa.

World Health Organization Regional Office for Africa, Brazzaville, 145 .

Table 1: Demographic characteristics of respondents (n=54)

Sl No	Observation	Number(Percentage)
1	Age ranges 18-25 Years	12(22.22%)
	Age ranges 26-45 Years	22(40.74%)
	Age ranges 46-60 Years	14(25.92%)
	Age ranges Above 60 Years	6(11.11%)

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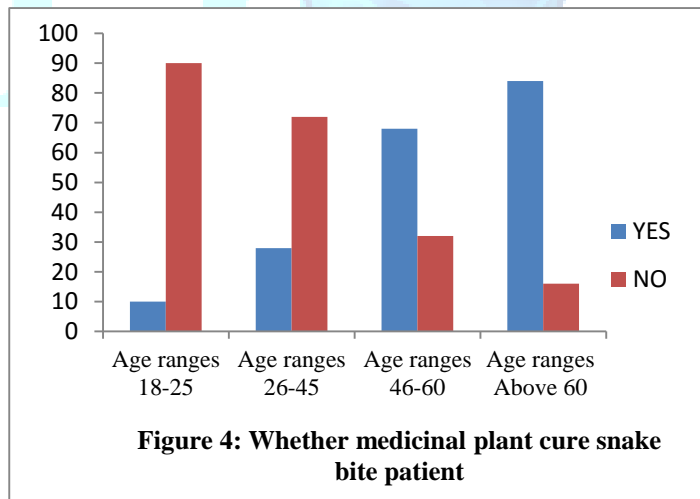
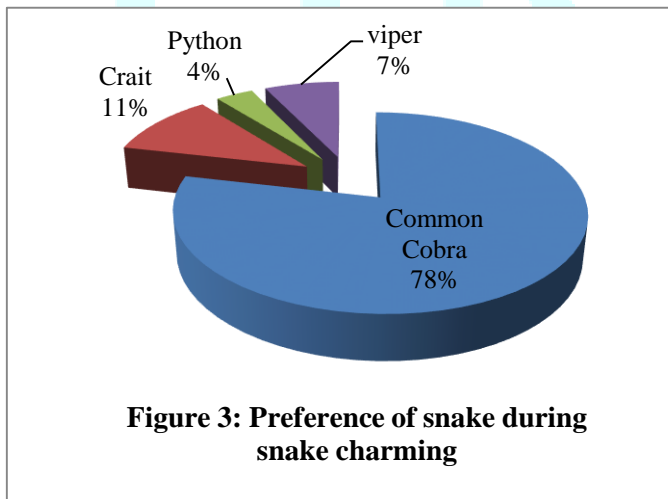
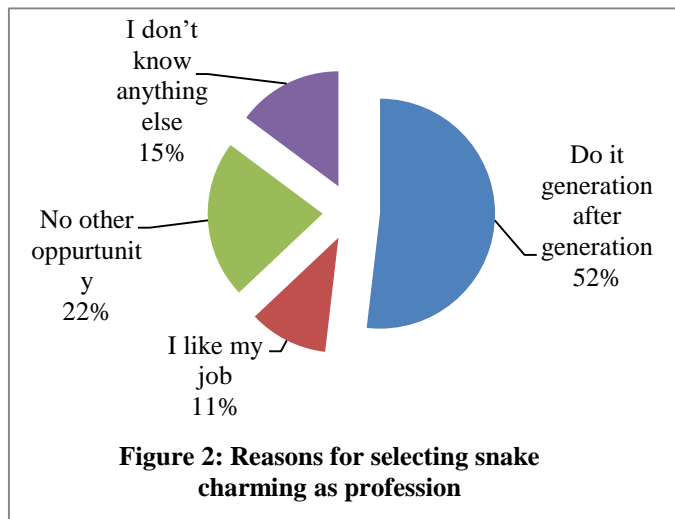
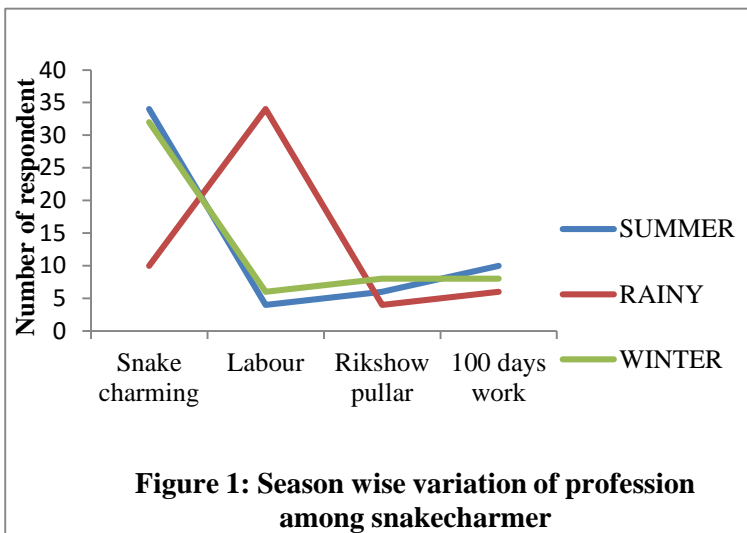
2	Education level -Non formal	26(48.14%)
	Education level -Primary	20 (37.03%)
	Education level- Secondary	6 (10.63%)
	Education level- College	2 (7.40%)
3	Marital status -Single	10
	Marital status -Married	38
	Widow/widower	6
4	Average Income	Rs.100-150 Per Day
5	House Earthen	44(81.48%)
	Bricks prepared by Govt.	10(18.52)

Table 2: Checklist of snake species caught by snake charmer of the study area

Common Name	Local Name	Scientific Name	Poisonous or Non poisonous (Types of venom)
Common Cobra	Gokhro or kharis	<i>Naja naja naja</i>	Poisonous (Neurotoxic venom)
Monocled Cobra	Keote	<i>Naja naja kaouthia</i>	Poisonous (Neurotoxic venom)
Common krait	Kalach	<i>Bungarus caeruleus</i>	Poisonous (Neurotoxic venom)
Banded krait	Sankhamuti	<i>Bungarus fasiatus</i>	Poisonous (Neurotoxic venom)
Russell's viper	Chandrabora	<i>Vipera russeli</i>	Poisonous (Haemotoxic venom)
Python	Ajgar	<i>Python molurus</i>	Non poisonous
Green vine snake	Laodoga	<i>Ahaetulla nasuta</i>	Poisonous (Neurotoxic venom)
Rat snakes	Daras	<i>Ptyas mucosus</i>	Non poisonous
Asiatic water snake	Jhal Dhora sap	<i>Natrix piscator</i>	Non poisonous
Indian wolf snake	,	<i>Lycodon aulicus</i>	Non poisonous
buff striped keelback	Hele sap	<i>Amphiesma stolata</i>	Non poisonous
Sand boa	Bora	<i>Eryx conicus</i>	Non poisonous

Table 2: Ethno medicinal plant used by snake charmer of the study area

Sl.No.	Name of the Plant	Vernacular name	Family	Parts used	Purpose of application / Mode of Preparation
1	<i>Hemidesmus indicus</i> L.	Anantamul	Asclepiadaceae	Root	Cold ,Fever, Dysentery, Skin disease
2	<i>Andrographis paniculata</i> Nees	Kalmegh	Acanthaceae	Leaf, whole plant	Dysentery, worm infection, work as liver tonic Dried leaf is powdered and taken in snakebite.
3	<i>Clitoria ternatea</i> L.	Swet Aparajita	Fabaceae	Root	Infertility
4	<i>Vitex negundo</i> L.	Nishinda	Lamiaceae	Root	Root is crushed with golmorich and pest given orally in snake bite patient .
5	<i>Glycosmis pentaphylla</i> (Retz.) DC	Ashshoura	Rutaceae	Root, Wood	Fever ,Snake bite,
6.	<i>Datura metel</i> L	Datura	Solanaceae	Stem	Extract of Stem are taken with garlic in snake bite
7.	<i>Mimosa pudica</i> L.	Swet Lajjabati	Fabaceae	stem	Mental tension
8.	<i>Aristolochia indica</i> L.	Ishwarmul	Aristolochiaceae	Root	Root is crushed with golmorich and juice given orally with ghee in snake bite
9.	<i>Euphorbia nerifolia</i> L.	Manasa	Euphorbiaceae	Latex	Latex is applied locally on the wound in snakebite
10.	<i>Gymnema sylvestr</i> (Retz.)Schult.	Gurmar	Asclepiadaceae	Leaf	Leaf juice is applied on the bitten area soon after bite.
11.	<i>Azadirachta indica</i> A.Juss.	Nim	Meliaceae	Leaf	For detection of snake bite patient chew the leaves to taste
12.	<i>Calotropis gigantea</i> (L.) W.T.Aiton	Akanda	Asclepiadaceae	Roots	Latex Root bark is ground into paste and made into pills. Plant latex is applied over the bitten area..
13.	<i>Kalanchoe pinnata</i> (Lam.) Pers.	Pathar kuchi	Crassulaceae	Leaf	1-2 spoons of leaf decoction is given every one hour after snakebite
14.	<i>Bridelia squamosa</i> Gehrman.	Kherkora	Euphorbiaceae	Stem bark	Stem bark decoction is given with a little "gur" (Jaggary) and a pinch of salt as an antidote to snake bite.
15.	<i>Holarrhena pubescens</i> Wall. ex G.Don	Kurchi	Apocynaceae	Seed	Seed paste is applied locally as antidote and for reducing the swelling and pain of snake bite
16.	<i>Wrightia tomentosa</i> (Roxb.) Roem. & Schult.	Swet Karabi	Apocynaceae	Root	Root is crushed and pest given orally in snake bite patient .
17.	<i>Annona squamosa</i> L.	Ata	Annonaceae	Dry fruit	Crushed fruit mix with coconut oil and used for headache
18.	<i>Capsicum frutescens</i> L.	lanka	Solanaceae	fruit	Used for detection of snake bite
19.	<i>Thevetia peruviana</i> K.Schum.	Swet Kolke	Apocynaceae	Root	Crush root mixed with milk and used for menstrual cycle problem
20.	<i>Butea monosperma</i> (Lam.) Taub.	Swet palas	Fabaceae	Root	Root paste is applied locally for joint pain.





Picture-1: Documenting traditional knowledge from snake charmer



Picture-2: Traditional box of snake charmer bearing Snake and ethno medicinal plant



Picture 3: Sharing of Traditional Knowledge about snake and ethno medicinal plant by Snake charmer