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Research Paper

ETHNOZOOLOGICAL PRACTICES AMONG TRIBAL INHABITANTS IN KHOWAI DISTRICT OF TRIPURA, NORTH -EAST INDIA

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Abstract

This paper documents in the first time,zootherapeutic practices among tribal inhabitants in Khowai district of Tripura,Indo-Burma biodiversity hotspot region in north- eastern part of India. It is primarily based on fields surveys carried out in villages and information collected from 235 local people about animal species used as medicine,methods of body parts used to prepare the remedies and for which ailments etc. The dominant tribes involved in using animal parts as medicines in the districts are Tripuri,Jamatia,Reang. The animal parts namely blood, excreta,meatetc.were used for relief from 23 health problem likeasthma,fever,arthritis etc.The study revealed that tribal community consumed a total of 25 animal species and out of these 28% is under invertebrates and 72% is under vertebrate's category.Among invertebrates and vertebrates, phylum Arthropoda and class Mammalia respectively takesplace dominant role. Data on ethnozoology has indicated that ethnomedicine is a respectable means to combat against diseases in this region. The information gathered from this study may be used for taking appropriate strategies towards conservation and management of faunistic resources in the investigated area.

Key words: *Ethno zoology, ethnomedicine, ethnic group, traditional knowledge, Khowai district,Tripura.*

INTRODUCTION

The massiverelationship between animal and human being is frequently referred as "Ethnozoology'' as a branch of science that deals with the study of total association betweenindigenous people and animal.It focuses at direct connection of animals to mankind[13].Man relationship with animals may for a range of purposes like food, medicine, clothes and other material needs. As Marques states, "all human culture which present a structured medical system will utilize animals as medicines" [18]. The use of animals for medicinal purposes is part of a body of traditional knowledge which is increasingly becoming more relevant to discussions on conservation biology,public health policies, a biological prospection with patents and sustainable management of natural recourses [1]. Research interest and activities in the areas of ethno biology, ethno medicine have been increased greatly in the last decade. Since the inception of the disciplines, scientific research in ethno biology and ethno medicine has made important contributions to understanding traditional subsistence and medical knowledge and practice[2].

In India, since times immemorial, great work was done in this field and documented in works like Ayurveda and Chakra Samhita. Additionally immense knowledge has come down to modern

times through folklore as various practices became a part of tradition amongst various groups. Thus there is an urgent need to inventories and record all ethnozoological information among the different ethnic communities before the traditional cultures are completely lost[25,10].The studies on the therapeutic uses of animals and their body parts have been neglected, when compared to plants[20,24].

North-east India being mega biodiversity region harbours rich floral and faunal resources which is predominates with many tribal groups that use animal body parts as traditional medicine[7] which is now threatened for sustainable conservation of species used in ethnomedicine due to various forces such as illegal trade.The ethnozoological familiarity of the different ethnic groups in this region ranges from edible, medicine and therapeutic use. However, in recent past the time tested traditional knowledge are eroding past, which need urgent attention [7,8,9,12].

Tripura, part of the Indo-Burma biodiversity hotspot region in north-eastern part of India is inhabited by 19 different ethnic tribal communities. Such a rich diversity of community has gifted the state with advantage for evolving innumerous knowledge on ethnozoology. They have developed their own practice through their traditional knowledge system. Due to consideration of high bio resource zone of studied area a lot of work has been done on the medicinal plants and plant products and documented too, but there is no information when it comes to animal products. Therefore keeping the aspects in view, an urgent need to inventories and record all ethnozoological information among the different ethnic communities to maintenance of this important cultural practice for strategies of conservation and management of faunistic resources. In the light of this, an attempt has made by the author to study and document traditional knowledge of animal use among the tribal people, which is fast diminishing due to decline of forest cover, agricultural practices etc. and to narrow the existing gap of our knowledge in this field.

MATERIAS AND METHODS

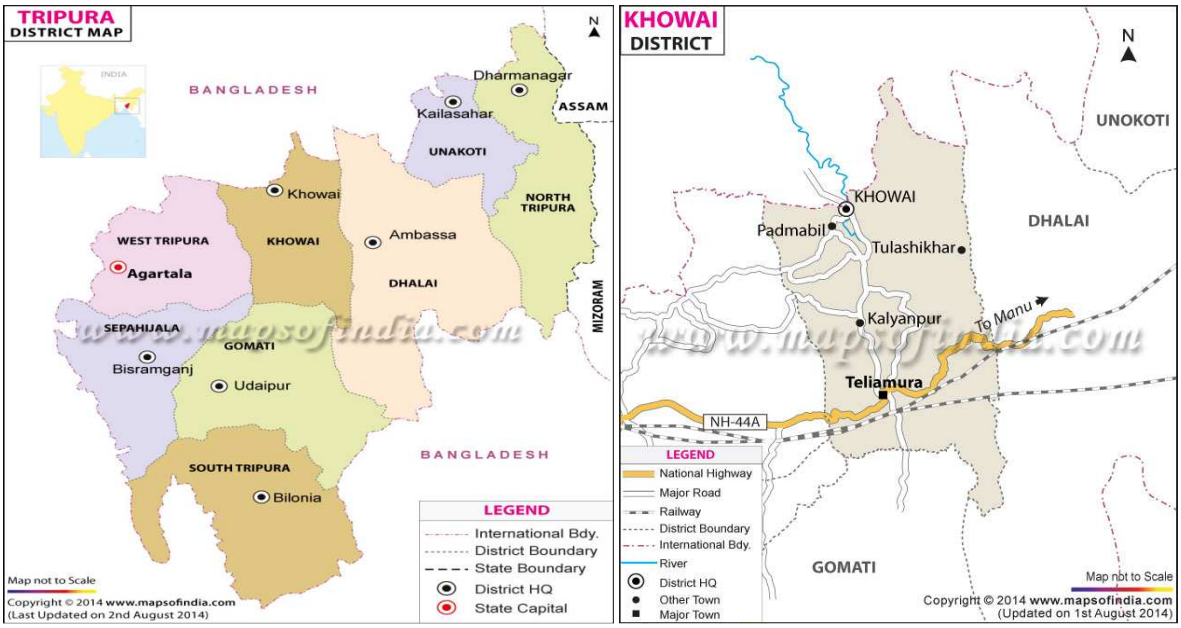
STUDY AREA

Khowai district of Tripura,North-Eastern Region of Indian sub-continent coveringan area of 1377.28sq. Km with 584.224 sq. Km forest area, bordering with Bangladesh by 61.5 Km in the west,which is part of the mega biodiversity zones of India with a rich population of flora and fauna. The landscape comprises numerous small hills covered with tropical semi ever green forest,tropical moist deciduous forest,high level sal forest, grass land, bamboo and manmade rubber plantation.The entire area of Khowai district, stretching between latitude of 24.1^0 N and a longitude of 91.63^0 E and an average elevation of 23 meters above the sea level is a populated place located in the state of Tripura. The area receives an annual rainfall of about 180.76 mm. The minimum and maximum temperature varies between 23.66^0 C and 43.88^0 C. It is experienced tropical climate with three distinct seasons throughout the year ie. summer, winter and autumn.Agriculture is poorly developed, mainly they are practice Jhum cultivation but recently it is gradually replace by rubber plantation and most of them depend solely on forests for their daily need. The intimate association and dependence of the tribal communities on the local natural resources have enriched them with invaluable knowledge on bio resource utilization through their traditional knowledge[Map:1-2].

Ethnos

Tripura a hilly State in the North-Eastern region of India is the homeland of different tribes. Altogether there are 19(nineteen) tribes in the State. They could be divided into 2(two) major groups as (i) Ab-original and (ii) Immigrants. All the aboriginal tribes have been migrated in this territory from a place in-between Tibbet, up hills of Burma like Arakan Hills Tracts and Shan State and adjacent to China. Aboriginal tribes are Tripuri, Reang, Jamatia, Noatia, Lusai, Uchai, Chaimal, Halam, Kukis, Garos, Mog and Chakma. Other tribes like Bill, Munda, Orang, Santal, Lepcha, Khasia, Bhutias are the immigrant tribes came and settled here for economic reasons. Most of them are Central Indian Tribes and came from Madhya Pradesh, Bihar, Orissa and West Bengal. Some of these tribes are however Northern-Frontier tribes came from Bhutan, Meghalaya, Sikkim and North Ben-gal. Chakmas and Mogs are Arakan Tribes entered Tripura through Chittagang HillsTracts. District Khowai has large numbersof tribal population. The

tribal community includes Tripuri, Reang, Jamatia, Munda, Santal, Chakma, Mog, Halam, Noatia. Majority of the tribals speaks in Kokborak as local language. As per census 2011, the total population of the district is 3, 27,564, out of these Schedule Tribes population is 1, 39,537[Source: http://wwwtripurastateportal.nic.in].



Map1 (left): Showing different district ofTripura, Northeast India.
Map2 (right): Showing different study area of Khowai district of Tripura in highlighted zone.

METHODOLOGY

The information reported is based on data collection from November 2012 to October 2015by performing interview through structured questionnaire from selected people(informants)through frequent visits virtually every nook and corner of the studied areas to collect information about traditional knowledge regarding use of animals and their products.These informants were local herbalists, healers, farmers, and midwives. The informants are between 35-75 age groups. The selection of informants was based on their recognition as experts and knowledgeable members concerning folk medicine through structured questionnaire[Appendix-1].The interviews were recorded and documented. All the animal species were identified by using relevant and standard literature.

Data analysis

Fidelity level(FL) calculation have been done adopting the methods of Jaroli et al[14]. The range of fidelity level(FL)is vary. High use value show that this particular animal species are used by large number of people while a low value show that the respondents disagree on that species to be used in the treatment of ailments.

RESULT AND DISCUSSION

Ethnozoological knowledge of the tribal inhabitants of Khowai district revealed various practices of 25 species asethnomedicine. Out of these 7 animalsspecies are invertebrate group and 18animal's species belonging to the vertebrate group [Fig-1]. Out of 7 animals from the invertebrate group, 1animal(4%) belongs to the phylum Annelida,5animals (20%) from the phylum Arthropoda and 1 animal (4%) from the phylum Molluscs [Fig-3]. In the vertebrate group, 2 animals (8%) belongs to the class Pisces, 1 animal (4%) belongs to the class Amphibia, 1 animal(4%) belonging to class Reptilia, 3 animals(12%))belongs to the class Aves and 11animals (44%) are class Mammalia[Fig-4].Tribal people use these animals and their products for the treatment of 23kinds of different ailments including asthma, paralysis, cough, fever,

wound healing etc. These animals were used as whole or by products of these animals like urine, blood, organ, flesh, body fluid,faecesetc. for the treatment of various ailments as traditional medicine [Table-1]. Among the informants of different age groups 65 to 75 years level was the highest knowledge shared (38.29%) followed by 55-65 age groups (29.78%) and lowest respondent age group was 35-45 (12.76%). More information on the uses of various animals in traditional healing practices among different age groups was increase according to their increment of age. Most of the information was shared by the elderly people were age is more than 55 years [Fig-2].

Fidelity levels(FL) demonstrate the percentage of respondents claiming the use of a certain animals for the same ailments. The uses of animals that are commonly available to informants have higher fidelity level than less common known. The goat(*Capra indica*) use to relieved tuberculosis, ulcer and gout has the highest FL(86%) followed by Apple snail(*Pila globosa*) to treat conjunctivitis and rickets and pig (*Sus scrofa domestica*) to cureburn and fracture(78%).Among the rest Lata (*Channa punctatus*) and Cow (*Bos indicus*) has lowest FL level with equal value(6%).

According to them, their knowledge of folk medicine was acquired mainly through parental heritage. It was also found that the older peoples are mostly preferredto use this folk medicine in comparison to other age group.In India, from the ancient time, the use of different kinds of animals as ethno medicine among different ethnic people were reported by host of investigators[Table-2] for curing several ailments such as diarrhoea,paralysis,fever etc. by different means of preparation. In India, it has been reported that 109 animal species uses in traditional medicine by different ethnic communities. Among these mammals played a great role constitute approximately 40% [17].A total of 25 identified animal species of which 4 animals (16%) are included in the IUCN Red list data 2015 [Source: http://www.iucnredlist.org 2015-4] It is important to mention here that Apple Snail, Red jungle fowl, House sparrow and Spotted deer are listed as Least Concern in the IUCN Red data list.The tribal people have believed on some superstition and myths associated with traditions, which cause harm to wildlife animal. Despite medicinal purpose, local inhabitant also uses animal resources for other purpose in their daily life for example, to decorate theirtraditional houses.This type of decoration is also reported in other part of India [14].

Tribal people stay close to nature and depend upon forest for their daily needs such as food, fuel, medicine etc. The tribal peoples collected all the resources from forest through capturing, hunting, killing etc. Utility of animals for therapeutical purposes are immense in tribal groups and their folk medicine system are always multidimensional. The diseases are also related with biological and socio-cultural dimensions of the society. Traditional healers use their five senses to diagnose the diseases, which are remarkable because they live in interior areas and lack the modern scientific treatment; however, they treat diseases using medicinal plants and animals[20, 22]. Documentation of such animals from the perspective of ethno zoological angle is important for the understanding of indigenous knowledge for conservation aspect for future need.

The values of animal based medicine are very important in tribal culture. They are the easily available resources for the majority of the tribal populations with limited access to other medical care system. Thus there is a need to shift the focus from how to ensure future uses. Researchers should recognize that the sustainable use of natural resources due to their medicinal value is one of the ways by which biodiversity is used[1,8]and there is also a need for a trans disciplinary approach to amalgamate the various aspects of zootherapy in such a way that frameworks or methods to unite ecological and social components of that practice can be increasingly tested[1].So the traditional knowledge should be included into the strategies of conservation of animals to save them from extinction. Further studies are required not only to confirm the presence of bioactive compounds in these traditional remedies, but also to emphasize more sustainable use of these resources.

CONCLUSION

This study provides an ethnomedicine data of the animals used by the local people to cure different diseases. Moreover, it may promote a practical use of animals for medical purposes. Information gained through this study is still preliminary and thus further studies on integrating scientific validation to the traditional wisdom for their pharmacological validation should include key factors like taxonomy, ecology, strategies of conservation and management of faunistic resources in the investigated area is required to complete understanding of the dynamics of these traditional knowledge systems. On the basis of these findings, it is concluded that there is an ample scope for exploration of the bio- efficacy of ethnofaunal diversity in entire region of Tripura and its adjoining areas.

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Appendix-1: Questionnaire used for data collection during study period

1. What types of animals is being used for which ailments?
2. Is they know the local name of animal or not?
3. Which body parts of animal is used?
4. What are the ingredients they have used along with animal body parts?
5. What are the mode of administration and proper dose?
6. What is the right length of application?
7. How they acquire this traditional knowledge system?

Table 1.List of animals and their parts use for therapeutic purpose in the studied area:

Sl.No.	English Name	Scientific Name	Local Name	Parts used	Medicinal uses	Methods of use
1	Earthworm	*Metaphire posthuma*	Kechu	Earthworm water	Arthritis	Kept 5-7 earthworm in a container for overnight and take orally next day morning at fasting condition
2	Prawn	*Palaemon sp*	Chingri	Whole body	General weakness	Cooked and consumed twice a week
3	Apple Snail	*Pila globosa*	Samukh	Pila water	conjunctivitis	Dropped into eyes 2-3 times daily
				Flesh	Rickets	Prepared soup with spices and taken orally
4	Crab	*Cracinus Sp.*	Kakra	Whole body	Asthma	Flesh consumed food for about 3 months
5	Honey bee	*Apis indica*	Madupuk	Honey	Cough	Honey is orally taken relief from

						cough
6	Crickets	*Cryllus Sp.*	Utranga	Whole body	Pneumonia	Roasted, mixed with honey and applied on ribs of infants thrice daily
7	Cockroach	*Periplanata americana*	Telichura	Whole body	Urinary obstruction	Ash is used with honey
8	Cuchia	*Monopterous cuchia*	Kaicha	Blood	Hair loss	Fresh blood messages onto affected area
9	Lata	*Channa punctatus*	Lati	Head	Sex stimulant	Prepared soup and consumed orally
10	Frog	*Rana tigrina*	Beng	Flesh	Wound	Crushed flesh applied on wound
11	Cobra	Naja naja	Panak	Casts of slough	Leprosy	Ashed mixed with mustard oil and applied on wound
12	Red jungle fowl	*Gallus gallus L.*	Jangli murga	Testis	Male impotency	Boiled organ consumed orally
13	House sparrow	*Passer domesticus*	Chara	Fecal	Constipation	Fecal matter is applied in the anus of baby
14	Pigeon	*Columbia livia*	Kabutar	Fresh blood	Paralysis	Fresh blood is massaged externally
15	Leopard cat	*Felis bengalensis*	Jangli biral	Flesh	General weakness	Cooked flesh consumed orally
16	Spotted Deer	*Axis axis*	Harin	Antler	Ear pain	Rubbed with Water and used as ear drop
17	Rhesus macaque	*Macaca mullata*	Banda	Flesh	Joint pain	Cooked meat use for joint pain
18	Flying fox	*Pteropus spp..*	Badur	Whole body	Asthma	Ash is use to cure asthma
19	Buffalo	*Bos bubalus*	Mahish	Meat	Sex stimulant	Cooked flesh consumed
20	Cow	*Bos indicus*	Garo	Urine	Fever	Weakness due to fever is cure by drinking urine.
21	Cat	*Felis domesticus*	bilai	Meat	Arthritis	Cooked meat with spices
22	Goat	*Capra indica*	chagal	Urine	Tuberculosis	Administered orally2 tea Spoon 21 days regularly.

				Intestine	Ulcer	Juice is used as a remedy for ulcer
				Dropping	Gout	Smooth paste with water is Applied on swelling
23	Jackal	*Canis aureus indicus*	Siyal	Meat	Asthma	Boiled Flesh consumed
24	Pig	*Sus scrofa domestica*	Sukar	Fat	Burn and Fracture	Fat applied on burn & wound area
25	Human	*Homo sapience sapiences*	Manush	Urine	Wound healing	Directly used onto wound site as antiseptic

Table2.Animals used as ethnomedicine reported from different parts of India with special emphasized on Northeast India:

Tribes/ Ethnic groups/ Region/ Indigenous people	Numbers of animals reported	Authors	Ref. No.
Orissa Part-1	13	Azami and Sinha(2010)	3
Chhindwana district, Madhya Pradesh	34,30	Badge and Jain(2013, 2015)	4,5
Warangal district, Andra Pradesh	23	Benarjee et al.(2010)	6
Mizoram and Arunachal Pradesh	26	Chinlampianga et al.(2013)	7
Nyishi, Monpa, Apatani	43	Chutia(2010)	8
Galo	12	Dagyom and Gopi(2009)	9
Santhals	18	Ghosh et al.(2013)	11
Karbi	32	Hanse and Teron(2012)	12
Naga tribes, Nagaland	26	Jamir and Lal(2005)	13
South Western Rajasthan	24	Jaroli et al.(2010)	14
Eastern Rajasthan	15,15	Mahawar and Jaroli(2006,2007)	15,16
Similipal Biosphere Reserve, Orissa	14	Mishra et al.(2011)	19
Rathawa, Koli, Bhils	9	Patel et al.(2012)	21
Arunachal Pradesh	22	Solanki and Chutia(2009)	23
Karbi Analog district, Assam	48	Verma et al.(2014)	26
Khowai district, Tripura	25	Present study	

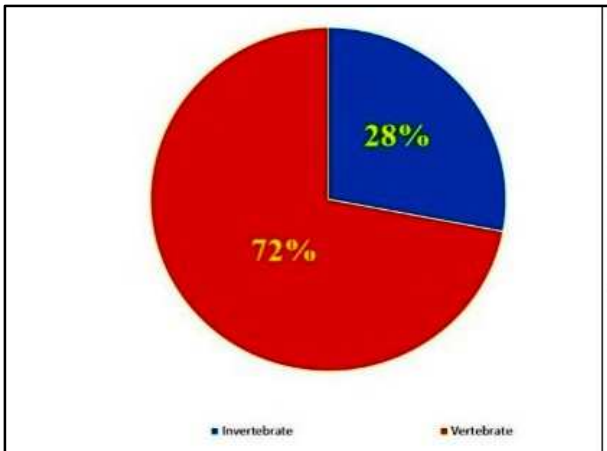

Fig 1: Graphical representation of contribution of different animal group

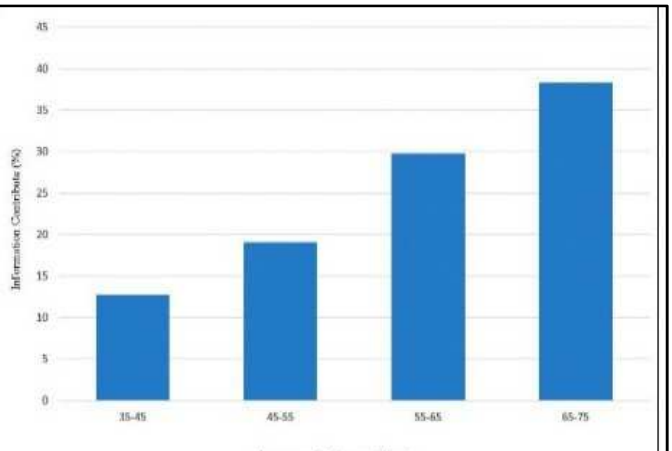

Fig 2: Representation of different age groups of informants and their contribution towards information sharing

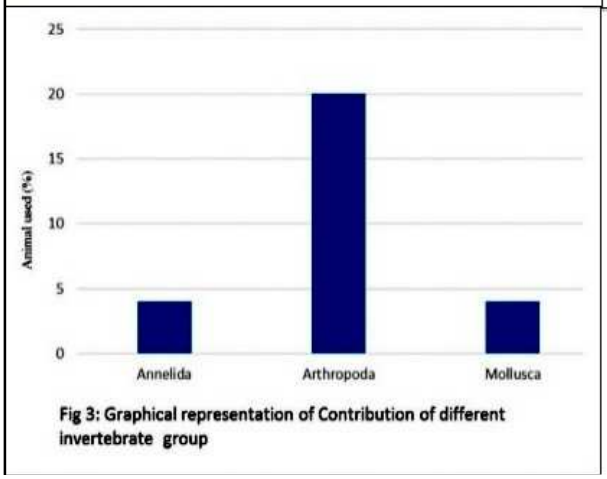

Fig 3: Graphical representation of Contribution of different invertebrate group

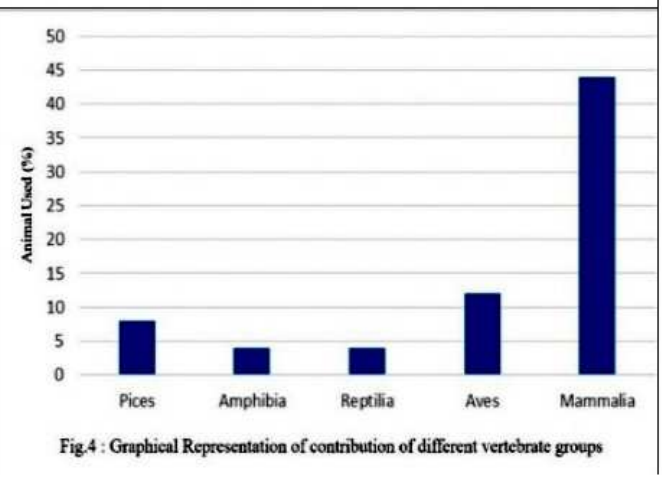

Fig.4 : Graphical Representation of contribution of different vertebrate groups

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