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Rare And Unexplored Ethnozoological Practices of Tangkhul Naga Community of Manipur: A North Eastern State of India

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Abstract

Ethnozoology is an applied discipline that integrates both the basic and social sciences which observe the aspects of nature, socioeconomic, anthropological and historical aspects of the animal and human relationship exist in that community. Tangkhul Naga community of the Ukhrul district of Manipur have a rich heritage of using animal products in their folklore medicines for the treatment of various human ailments since time immemorial. The present study was carried out with an intention to find out various animal-based products uses in the traditional healing system among the Tangkhul Naga community of Manipur, India. A survey for the data collection was carried out for a period of one year through semi-structural questionnaires, interactions through oral conversations with local medicinal practitioners, old men and women. The study reveals that a total 21 different animal species and their products are used for the treatment of different human ailments. Of the total 21 numbers of animals, 9 belongs to the invertebrate groups and 12 to the vertebrate groups. Out of the 9 animals from the invertebrate group, 1 annelid, 7 arthropods and 1 mollusc comprise 4.76%, 33.3% and 4.67% fauna respectively while in the vertebrate group, 2 amphibians, 1 reptile, 3 Aves and 6 mammals contributed 9.5%, 4.76%, 14.28% and 28.57% fauna respectively. The finding shows that the ethnozoological practices of using animal derived medicines employed by Tangkhul community in Manipur plays an important part in the primary health care system of this community which are rare as well as undocumented till today. Proper documentation and sustainable exploration of such rare traditional information on ethno-zoological practices of the Tangkhul community of the Manipur will be helpful in the integration of the traditional knowledge system in the modern medicines and ultimately in the formation of strategies for sustainable exploration and conservation of such bio resources.

Key words: *Bioresources, ethno-medicine, Bioprospecting, traditional knowledge, Naga Tribes*

1. Introduction

The rich heritages and knowledge on folklore medicines employed by various ethnic communities inhabiting all over the world which help them heal, cure and contain various human ailments is an ultimate product of their culture, traditions, native values, arts, ideas and rituals (Young 1983; Janes 1999). In this regard, several scientific reports are available on the therapeutic use of ethnozoological animal products by certain tribes of

India which shows an effective and miraculous healing of the various kinds of human ailments in which parts of the animal body such as liver, flesh, bones, bone marrow, urine, bile, fat, body hair and whole body is use (Ngaomei and Singh, 2016). There is also reports of using animal based bioresources comprising of five invertebrates, 28 vertebrate species and certain fish species in the folklore medicine for the prevention and treatment of various diseases by the different native community of the North Eastern states of India (Devi *et al.,* 2015 ; Chanu *et. al.* 2016).

Although traditional healing practices using medicinal plants and ethnozoological products are known to us since the old time, the earnest interests in the identification of animal bioresources in such folklore medicines started just 10-20 years ago in many countries of the world (Alves and Rosa, 2005; Mahawar and Jaroli, 2006). The World Health Organization (WHO) reported that a chunk of World's population primarily depends on the traditional medicines based on the animals and plants products and it also remains a popularly accepted and affordable form of disease management systems in many of the under develop and as well as developing countries. (WHO, 2013). Curing and treatment of certain human diseases by using animal products is an accepted form of medicinal practices among the various indigenous people all over the world. In India, major chunk of Ayurvedic medicines is mainly prepared from the ethnozoological products involving many mammals, aves and species of piscine, reptiles and insects (Salomi Jugli *et al.,* 2020). All these animal products are used in the cocktail of medicines by the traditional medical practitioners for the treatment of persons suffering from the certain diseases (Pandey, 2015; Sarkar *et al.,* 2014)

Studies on indigenous medical practices based on the animal bioresources is comparatively low compared to medicinal plants-based healing practices. The scanty of such data is mainly due to the reason that knowledge of folklore practices based on ethnozoological products is generally passed from one generation to the next generation orally and this knowledge is lost gradually as the knowledge bearers die (Borah and Prasad, 2017; Jaroli *et al.,* 2010). As a result of that, it is pertinent to preserve such information and knowledge on indigenous and traditional healing practices of the various ethnic communities before it gets lost forever (Hussain and Tynsong, 2021).

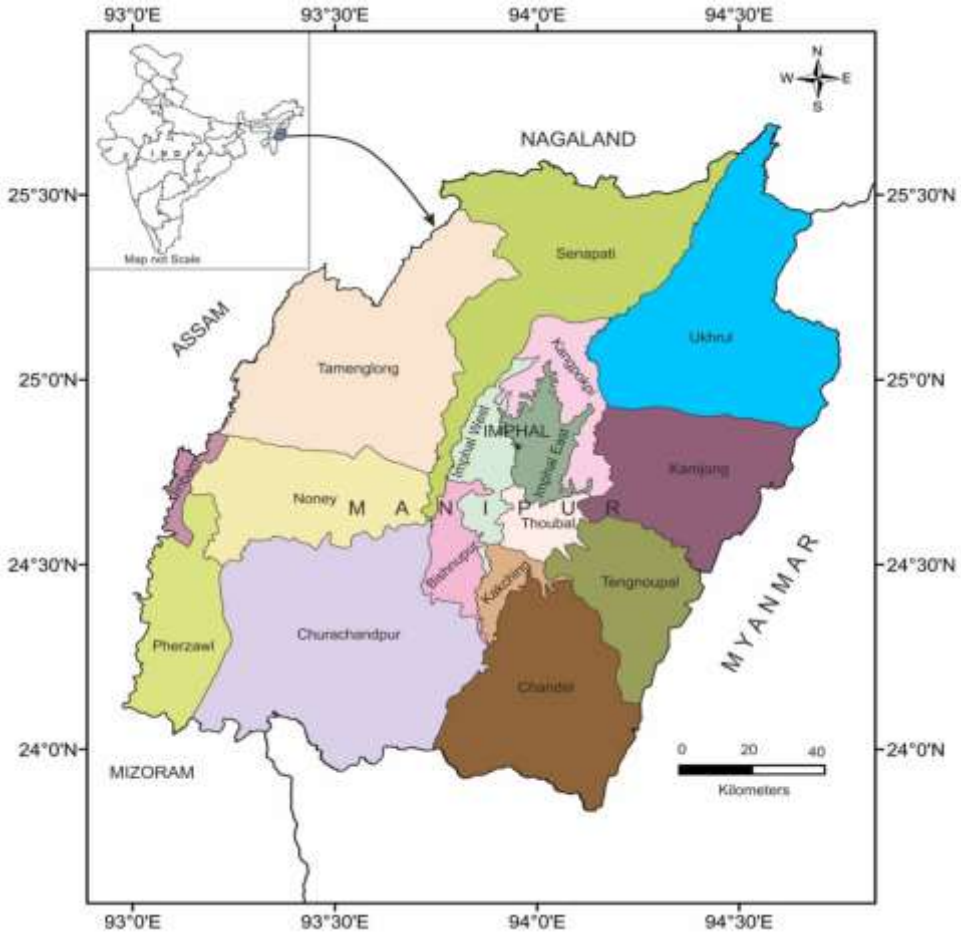
North Eastern States of India is the regions where different ethnic tribal communities were inhabitat who possessed rich heritage of traditional healing practices since time immemorial. Among such ethnic group, the Tangkhul Naga community of Manipur are main inhabitants of the hill districts of Chandel, Senapati and Ukhrul of Manipur mainly confined in the Ukhrul district. Tangkhul Naga constitutes the major bulk of the population among the hill tribes of Manipur State of India. They are mongoloid people having Tibeto-Burman dialect and the Ukhrul district share an international boundary with Myanmar (Burma) **(**Shimray, 2007). Throughout the year, the temperature of this region is ranging from the minimum of 3^{o}C to the maximum of 33^{o}C with an average annual rainfall about 85,31cm (Shimrah *et al.,* 2018). As the Ukhrul district is located at the confluence of Eastern Himalaya and Indo-Burma biodiversity hotspots, the regions is rich in biodiversity and are the home for various endemic and endangered flora and fauna. As the Tangkhul communities resides in the remote areas of the hilly regions of Manipur rich in varieties of plants, animals and birds and are far from the cities where the privileges of modern medical facilities are available, most of the people usually rely on the traditional ways of treatment for human ailments using either medicinal plants or ethnozoological animal products. Therefore, it is pertinent to record all the important traditional zoo-therapy treatments used by the indigenous Tangkhul Naga tribe of Manipur and to find out various information on the important fauna used for medicinal purposes and preserve their lives for the future generation. Accordingly, the present study to document all the rare and unexplored traditional ethnozoological practices employed by the Tangkhul Naga communities of Manipur was undertaken to provide a complete database of such rare information of traditional medicinal practices of the one of the major ethnic communities of North Eastern states of India. The results of the study are given in this communication.

2. Materials And Methods

Study Area: Manipur is a hill state in the North-eastern region of India and lies between 23.5^{0}N and 25.4^{0}N and between 93.4^{0}E and 94.3^{0}E. The state shared its border with Nagaland on the north, Mizoram and Myanmar on the south, the Somra tract and upper Chindwin District of Myanmar on the east and Cachar District of Assam on the west. The total area of the state is of 22,327sq.km with an altitude ranging between 1,500 to 3,000 m above the mean sea level (amsl). Ukhrul District where Tangkhul community are the main inhabitants is located at the north-eastern part of Manipur bounded by Myanmar in the east, Nagaland state in the North, Imphal east and Chandel District of Manipur in the south and Senapati and Kangpokpi District in

the west (Figure-1, Blue colour). The geographical coordinates of the district are at 24°N - 25.41°N and 94°E-94.47°E. The district is hilly in terrain with varying heights of 913 to 3114m amsl (Shimarh *et al.,* 2018). The climate of the district is pleasant during most part of the year with temperature ranging from 3°C to 33°C with an average annual rainfall about 85.32cm.

Figure 1. Manipur Map showing Ukhrul district



Data Collection: A survey was conducted for a period of one year from the March 2021 to March, 2022 and data were collected through semi-structural questionnaires administered to the local indigenous people, interaction with local medicinal practitioners, old men and women through oral conversations (Photographs 1, 2 and 3). The collected information was about the various traditional knowledge regarding use of animals and their products. Most of the data recorded is based on verbal communication with the local people. All the animal species used in the traditional medicinal practices were identified by using relevant & standard literature. The local people were asked simple questions during interaction like the various animals and animal products used for treatment of various human ailments and any other local folklore which is considered important with the animal in questions. When the whole animal body parts or its products were used, the specimen was shown to us by interviewee and from the pictorial illustrations, we are able to identify the species in question (Grewal and Pfister 2004; Ahmed *et al.,* 2009). When some species of animals belongs to a protected species, we could not collect specimen samples, however, we collected local name. common name. According to respondents, all these ethnozoological practices by their community is because of the knowledge acquired from their forefathers and the same was passed to one generation to next. Rapid development and changes in the lifestyle by the local people and other factors have led to the decline of the medicinal practices of using ethnozoological products.

Photograph 1: With a local Folk Healer of Tangkhul Community, Manipur

Photograph 2: With Local Medicinal Practitioners of Tangkhul Community of Ukhrul district of Manipur

Photograph 3: Interactions with local Tangkhul Community of Ukhrul

3. Results and Discussion

The information on the traditional knowledge of the enthnozoological practices of Tangkhul Naga Community of Manipur in connection with the uses of various animal and their body parts in the treatment of human ailments has been provided in the Table-1 and Photograph- 4. The animals used are presented as per their taxonomic positions. A total 21 numbers of animals where 9 belongs to the invertebrate groups and 12 to the vertebrate groups were recorded to be used by the Tangkhul Naga community of the Ukhrul district of Manipur in connection with the formation of ingredients for the treatment of various human ailments. (Table-1) The used of arthropods (insects) and its parts was found to be highest constituting 33.3% followed by mammals (28.57%), Aves (14.28%) then amphibians (9.5%) while reptile, annelid and gastropod mollusc shared the same percentage (4.76%) (Figure-2). Our studies are in agreement with some of the published studies in India (Jamir and Lal, 2005; Dixit *et al.,* 2010; Bino *et al.,* 2015) and in other parts of the world (Alves *et al.,* 2008, 2010; Alves and Alves 2011; Martinez, 2013), Africa (Adeola, 1992; Mbaya and Malgwi, 2010; Whiting *et al*., 2011; Izah and Seiyaboh, 2018). Highest recorded use insects in the ethnozoological practices by the Tangkhula Naga tribe of Manipur in our study may be the highest availability of insect species in the region due to the region being part of the Indo biodiversity hotspots.

It has been reported that mammals and aves form major components in the local folklore medicines while the amphibian was found to be lowest percentage in the faunal contribution (Sharma and Khan, 1995; Mahawar and Jaroli, 2006; Betlu, 2013). Disparity of the recorded data with the present study and those of the other reported studies may be due to various reasons specially abundance and availability of specific species, climatic and environmental conditions and other factors which may have an impact on the habitat of the species.

Pheretima posthuman

Periplaneta americana

Heterometrus bengalensis

***Cybister tripunctatus* larvae**

Scolopendra gigantea

Apis indica

Macrobrachium rosenbergii

Scylla serrata

Cipangopaludina lecythis

Hoplobatrachus tigerinus

Tylototriton verrucosus ***Python Fat***

Upupa epops ***Columba livia***

Gallus gallus ***Canis lupus***

Deer Bone marrow ***Capra aegagrus hircus***

Bear Gall Bladder

Fermented Pork

Photograph 4: Photographs showing Animals and body parts used in the Ethnozoological practices by the Tangkhul Community of Manipur

In the present study, the Tangkhul Naga community in the Ukhrul district of Manipur uses insects in highest percentage in their traditional ethnozoological practices for the treatment of the various human ailments. There are various published reports from the other authors where varieties of insects have been used in the indigenous medical practices for the treatment of certain diseases. It has also been reported by other studies that cockroach is consumed in raw form as treatment measure to get relieve from the discomfort of the asthma and tuberculosis while ash prepared from the cockroach in crude liquor is consumed regularly for almost one month for the treatment of stone problems in urinary bladder, asthma, diabetes, tuberculosis and normal flow of urine (Jamir and Lal, 2005); Dixit *et al.,* 2010; Bino *et al*., 2015). In addition to the above, Chinlampianga *et al*., in 2013, reported that after sacrificing the cockroaches, it is sundried and then boiled with water and is drunk or taken orally for the treatment of various human ailments such as asthma, stomach-ache and children suffering from the continuous saliva exuding from the mouth. Moreover, there is report of using ash of cockroach with honey for the treatment of urinary obstruction and to treat asthma (Neelima and Shampa, 2017; Dipak, 2015). Besides this, there are reports of placing scorpion in boiled water or alcohol (rum) for one or two hours and consumed the water twice or thrice a day after filtration for the treatment of cancer. In addition to this, roasted scorpion is also consumed to prevent from cancer while the extract of the boiled whole body of the scorpion with mustard oil was used to apply and massage in the joints of patients to relieve from the pain of the rheumatic arthritis (Jamir and Lal, 2005). Moreover, Tribal of Khowai Districts of Tripura orally taken honey to relief from cough (Dipak, 2015.) There is also an interesting published report which stated that all the body part of a crab is properly cooked and the flesh part is consumed as food regularly for 3 months. Moreover, the fresh fluid from joints of the crabs is also collected and after mixing with the medicinal plants for curing asthma, people having unhealthy bones and hair and also administered to new mothers for proper lactation (Dipak, 2015; Vinu and Sadanand, 2019). The whole body of prawn is also cooked and consumed twice a week to recovered general weakness is mention by Dipak in the year, 2015.

Table 1. Traditional uses of Ethnozoological Products in folklore medicines by Tangkhul Community of Manipur

Sl. No	Phylum	English/ Common Name	Scientific/Zoological Name	Local Name	Parts Used	Medicinal Uses
	Mammalia					
1.		Dog	*Canis lupus*	*Fa*	Feathers	Ash of dog feathers is applied with powder of rice over the injured spot when the dog bites for about one week. It helps to protect from rabis.
2.		Deer	*Cervus unicolor*	*Chao*	Bone marrow	Deer bone marrow is used as ointment for the treatment of Arthritis,

					pain, bone joining, burn and sprain.
3.	Goat	*Capra aegagrus hircus*	*Neh*	Urinary bladder and bone marrow	The urinary bladder of goat is used as the best medicine for the treatment of dysentery. A small piece of urinary bladder is taken and soaked it in water for a few minutes and then stirred it vigorously. The solvent that is prepared is used to prescribe to drink for dysentery. The bone marrow of goat is also used to apply to the dislocated area in case of dislocation of joints.
4	Bear	*Melursus ursinus*	*Saingom*	Gall Bladder	A small piece of gall bladder is mixed with honey in hot water and stir until completely quick relief from pain.
. 5	Porcupine	*Hystrix indica*	*Rikra*	Intestine, spine	The intestine of porcupine is used for the treatment of vomiting. Also, a small piece of intestine is fried along with its contents and is orally consumed to cure asthma. Moreover, spines of porcupine are also collected and powdered for oral consumption for asthma.
6.	Pig	*Sus domesticus*	*Hok*	All the edible meat portion	Fermented pork after boiled in water is administered to the woman after the delivery of child and lactating mothers for health and protection from anaemia.
Aves					
1.	Pigeon	*Columba livia*	*Khana*	Meat portion	Meat is cooked or boiled with water and consumed for the treatment of general weakness and painful in muscles.
2.	Hen	*Gallus gallus*	*Har*	Whole body Parts	A small chicken is killed and ground the whole-body parts then packed in a piece of

						clean cloth and steamed in a pot. The hot pack is then used for fomenting the dislocated area in dislocation of joints.
3.		Hoopoe	*Upupa epops*	*Kazeihar*	Meat, Bone	Flesh with bone is cooked or boiled with water and used two times a day for the treatment of kidney stone cases, urinating problem and white discharge in women.
	Reptilia					
1.		Python	*Python molurus*	*Rarei*	Fat portion	Python fat is applied to relieve body ache, rheumatic, and burn wounds pain.
	Amphibia					
1.		Salamander	*Tylototriton verrucosus*	*Lengba*	Whole body parts	Whole body parts of salamander is roasted and consumed with salts at least once a week for the treatment of cancer.
2.		Frog	*Hoplobatrachus tigerinus*	*Khaifa*	Meat portion of Hindleg	Boiled the flesh part of the hindlegs of frog with water and consumed after filtration to keep healthy. It is also used for the treatment of cough.
	Mollusca					
1.		Snail	*Cipangopaludina lecythis*	*Khopla*	Edible meat portion	When the small children was infected with 'small pox', the child is treated by feeding them cooked snail meat.
	Arthropoda					
1		Prawn	*Macrobrachium rosenbergii*	*Kotkula*	Whole body parts	In case of children suffering from 'small pox', the parents feed them with cooked prawn twice or thrice a week to prevent general weakness and to boost immune system.
2.		Crab	*Scylla serrata*	*Khaireo*	Whole body parts	To treat children suffering from 'small pox', cooked crabs are twice a week for 3 months to prevent

						general weakness and to boost immune system.
3.		Honey Bee	*Apis indica*	*Kaha*	Honey	10 ml of honey and 10 ml of lemons juice are mixed with one glass of water and drink in empty stomach in the morning for the treatment of coughing, joint pain and purification of blood.
4.		Centipede	*Scolopendra gigantea*	*Katei nakhui*	Whole body parts	Centipede is put in a bottle with wine for few hours. The wine is mixed with its secretion and then prescribed one glass of mixture twice a day for treatment of tuberculosis.
5.		Cybister	*Cybister tripunctatus*	*Gazikla*	Larvae	The larvae of Cybister are crushed with water and honey to make a volume of 10 ml. The cocktail is consumed two times a day for the treatment of small pox, allergy and cough.
6.		Scorpion	*Heterometrus bengalensis*	*Seithak*	Whole body parts	Whole body parts of scorpion is placed in boiled water or wine for one or two hours and drinks the water for about one glass of water twice a day after filtration. It is also consumed after roasted for the treatment of cancer.
7.		Cockroach	*Periplaneta americana*	*Pharao*	Whole body part	Whole body a part of the cockroaches is consumed after roasted for the treatment of Diabetes mellitus. It helps to reduce sugar level.
	Annelida					
1.		Earthworm	*Pheretima posthuma*	*Lingdak*	Whole body parts	Whole body part of the earthworm is crushed in water and drink for about 10 ml, thrice a day. It is also used for the treatment of typhoid, as antidote in snake and spider bites. It is also used for curing

	burning sensation during skin injury.

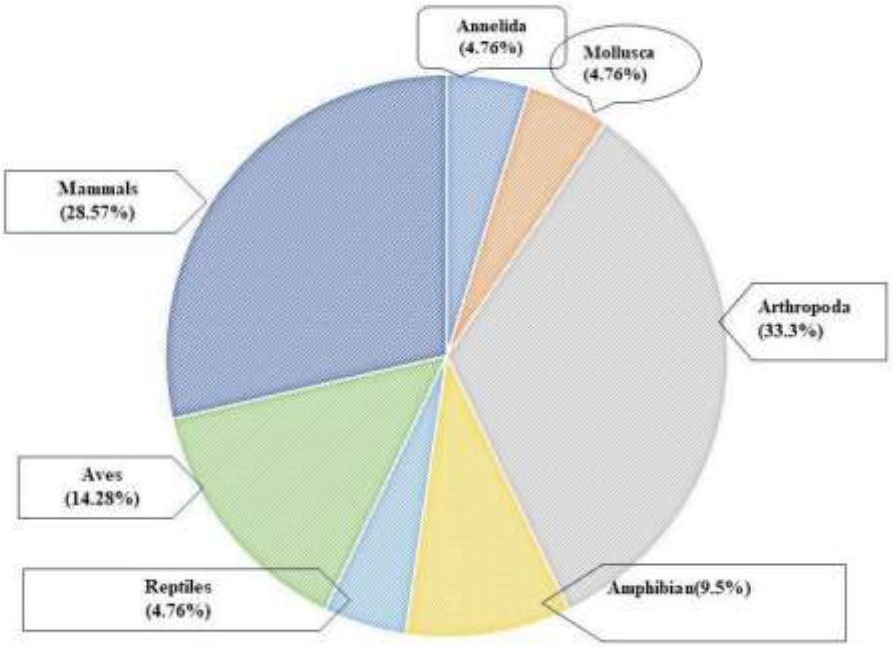


Figure 2: Percentages distribution of the faunal species in various categories used in ethnozoological practices by the Tangkhul Naga Community of Manipur

Besides insects, in the present study, the Tangkhul Naga community of Manipur uses other fauna *viz.* mammals, birds, amphibian, reptile and invertebrate species in their folklore medicines for the treatment of the various diseases contributing 28.57%, 14.28%, 9.5%, 4.6% and 9.52% respectively of the faunal used. Other published studies from the various authors of the country also reported using such fauna mention *per se* as an ingredient in the indigenous ethnzoological practices for the treatment and management of various human ailments. It has been reported by Jamir and Lal in the year 2005 that frog's skin is applied on the wounds suffer from burn for speedy healing while the fat part of the frog is also used in body joint massage to relive the rheumatic- joints pain. In addition to this, flesh part of the frog is properly crushed to form a paste and then applied on wounds for quick healing (Dipak, 2015; Neelima and Shampa, 2017). Jamir and Lal in the year 2005 also reported that the used of pigeon meat by the traditional medicinal practitioners for the treatment of general weakness and painful in muscles while the fresh blood of pigeon is used for the people suffering from the paralysis and jaundice (Neelima & Shampa, 2017; Rosner, 1992). Another interesting study also reported that a small chicken is killed and ground the whole-body parts then packed in a piece of clean cloth and steamed in a pot. The hot pack is then used for fomenting the dislocated area of joints. Moreover, Vinu Mary and Sadanand, in the year 2019 also mentioned the uses of hen by extracting the fat from its body and applied over the burned skin by indigenous tribal communities of Wayanad district of Kerala. For the treatment of various human ailments like stone cases, erectile dysfunction, urinating problem and gall bladder stones, traditional healers used flesh and dried form of the *Hoope* after properly cooked or boiled with water and administered to the patients two or three times a day (Ngaomei and Singh 2016; Betlu, 2013).

In an interesting studies, it has been reported that fat from the python is used in various ways by the local traditional folklore practitioners for the treatment of patients specially suffering from the burn injuries and rheumatoid arthritis to get rid of body ache, joint pain of rheumatic arthritis and pain from the burn injuries (Bino *et al.,* 2015; Ngaomei and Singh, 2016). It has been reported that the local traditional healers used a small piece of intestine of the porcupine along with its content and fried properly or spines of porcupine are collected and grounded in powder form and then administered to the patients orally to cure or relive from the asthma (Vinu and Sadanand, 2019). The natives of Naga tribal communities inhabiting the Nagaland and

Tripura used snail as an ingredient in their folklore medicines for the treatment of conjunctivitis and rickets (Dipak, 2015).

4. Conclusion

From the above finding, it can be concluded that the people belonging to the Tangkhul Naga community of the Ukhrul district of Manipur have a rich ethnozoological knowledge and resources. This study provides an ethnomedicine data of the used of animal or animal products by the natives as well as traditional medical practitioners belonging to the Tangkhul Naga tribes to cure and manage various human ailments. It has been observed from the study that a large number of animals or its products found to be contained a number of active chemicals having medicinal values which can be used use to treat a wide range of ailments. However, changes in environment and ecosystem, habitat destructions, deforestation, scanty of knowledge on the awareness programme for preservation and conservation, unsystematic or unstainable utilization by the people have posed a profound threat to the remaining ethno-medicinal animals in Ukhrul District, Manipur. Lastly, an emphasize should be given in an urgent basis to record and properly document all the ethnozoological practices and knowledge of the Tangkhul communities of Manipur and before all the available information of such rare knowledge and practices finally disappears for forever from the land.

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