MEDICO-ETHNOZOONOLOGICAL STUDIES ON AMNIOTES FAUNA OF DEVIPATAN DIVISION OF UTTAR PRADESH, INDIA

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ABSTRACT
The medico-ethnozoological survey was carried out in 46 village of Tharu community inhabited at Indo-Nepal border of eastern Uttar Pradesh. Interviews of local healers were conducted to collect the indigenous knowledge recording use of amniotes animals to cure the human diseases. Total of 24 species of amniotes were identified as medicinal importance. Out of 24 amniotes, 11 are fishes, 4 amphibians and 9 are the reptiles. The low cost and almost no side effects of the ethnozoological preparations made them adaptable for use by the local communities particularly curing various ailments of human being. An attempt has been made to document the ethnozootherapeutics and folk claims

Keywords: Amniotes animal, Ethnozoology, Tharu tribes, Devipatan division.

INTRODUCTION
Ethnozoology is a branch of anthropology that deals the relationship of animals to mankind. The most important aspect in this context ramifies as traditional mode of treatments of various kinds of ailments using animals and their products in a tribal community. Although inadequate, attempts have been made to elucidate medical significance of animals and their products in certain tribal communities from the Indian sub-continent (Azmi, 1991; Ghosh & Maity, 1992; Joseph, 1982; Prakash et al., 2017; Puri, 1970; Puspagandhan, 1990; Sharma, 1990; Sharma, 1993). The medico-ethnozoological system makes extensive uses of large number of drugs of animal origin. These remedies are beneficial or claimed to be so, in a variety of human ailments. The contemporary society may benefit much from the tribal experiences in its fight against disease and sufferings. However, this system is likely to suffer from drawbacks pitfalls and ostentations. It is high time to pay more attention to the animal Kingdom and record such animals before these eliminated from the area of their occurrence.

Devipatan division of eastern Uttar Pradesh lies between 26°48' and 29°24'N and 81°30' and 82°40' E and comprises 14,220.10 Km² (4.83%) area of U.P. Devipatan division is bounded by territory of Nepal in North. According to 1991 census, the Tharu tribal population in Devipatan division was 24,670, mainly distributed in three districts Bahraich (6,110), Shravasti (3,340) and Balrampur (15,180). They live along Indo-Nepal border in about 46 villages and use many animal and plant species for healthcare practices and have enormous knowledge about their medicinal usage. The knowledge, which is mostly undocumented, is transmitted orally from generation to generation thereby restricted to a particular family, tribe, or section of society, which has led them to the verge of extinction. Since due to various reasons, both natural resources and Tharu culture are depleting at an alarming rate, therefore, there is an urgent need to explore and document this unique and indigenous knowledge before it is lost forever. Keeping this in mind, the present study was undertaken for documentation of ethnomedicinal knowledge and folk claims of Tharu tribes.

MATERIAL AND METHODS
The extensive and intensive survey was made in Tharuhat (Tharu areas) of Balrampur, Shravasti and Bahraich districts of Devipatan division covering 46 villages to collect the ethnozoological information. All the...
ethnozoological information and associated folk claims were collected either by contacting local healers (Guruwa), village headmen, elder person having thorough knowledge of animals and animal-based remedies. The knowledgeable persons were interviewed and various medicoo-ethnozoological aspects i.e. utilization, domestication and conservation practices for each animal were recorded.

RESULTS AND DISCUSSION
Fishes, amphibians and reptiles are cold blooded poikilothermic animals and grouped into amniotes animals. Tharu (inhabitants of Indo-Nepal border) tribal peoples of 46 villages of Bahraich, Shrvasti and Balrampur districts of Devipatan division of U.P. have belief upon traditional knowledge regarding medicinal use of different amniotes animals and their byproducts for curing different human diseases. This traditional knowledge is generally confined to the local healers known as Guruwa and elder person of village. In the present study total 24 amniotes animals were used to treat number of human diseases. Out of 24 amniotes, 11 are fishes, 4 amphibians and 9 are the reptiles. The information regarding medicinal application of amniotes animals and their body parts or byproducts used as drug against the different ailment has been presented in Table 1-3.

Table 1. Medicinal use of Some Fishes by Tharu tribes of Devipatan division of U.P.

<table>
<thead>
<tr>
<th>Name of Fish</th>
<th>Part(s) used</th>
<th>Mode of application</th>
<th>Nature of Ailments/diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Order- Cypriniformes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rohu, <em>Labeo rohita</em> (Hamilton)</td>
<td>Liver</td>
<td>Boiled in water, soup drunk and remainder cooked and eaten once daily for 3 weeks.</td>
<td>Night-blindness</td>
</tr>
<tr>
<td></td>
<td>Scales/ Teeth/ Bones</td>
<td>Incinerated powdered mixed in honey and applied into the eyes at bed time.</td>
<td>Weak-sight, Eye troubles</td>
</tr>
<tr>
<td></td>
<td>Gall Bladder (Bile)</td>
<td>Ground the gall bladder with water or 8-10 drops bile diluted in one glass of water and drunk in empty stomach once daily for about one month</td>
<td>Gastric enteritis / Gastric ulcer</td>
</tr>
<tr>
<td></td>
<td>Flesh</td>
<td>Cooked with light spices and consumed 2 or 3 times per day, for about one month.</td>
<td>Galactoschesia, Whooping cough, Bronchitis, Loss of sexual vigour.</td>
</tr>
<tr>
<td></td>
<td>Fat</td>
<td>Warmed, massaged externally thrice daily, for three weeks.</td>
<td>Facial Paralysis</td>
</tr>
<tr>
<td>Mola, <em>Amblypharyngodon mola</em> (Hamilton)</td>
<td>Whole body</td>
<td>Cooked with light spices and consumed once daily, for 2-4 weeks as required.</td>
<td>Chicken &amp; small pox, Pain, Asthma</td>
</tr>
<tr>
<td>Chilwa, <em>Chela bacaila</em> (Hamilton)</td>
<td>Whole body</td>
<td>Boiled, squashed, macerated in water and taken twice daily, for one week</td>
<td>Weal- sight, Night blindness,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deep fried in mustard oil, extracted the oil from the body and applied into eyes.</td>
<td>Eye ailments</td>
</tr>
<tr>
<td><strong>Order- Siluriformes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mangur, <em>Clarias batrachus</em> (Linnaeus)</td>
<td>Whole body</td>
<td>Cooked with black pepper and take orally twice daily, for two weeks</td>
<td>Body ache, Bronchitis, Wound healing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Incinerated powder mixed with honey and applied on jaws of babies once daily, for two weeks.</td>
<td>Gum-boils, Teething problem</td>
</tr>
<tr>
<td>Singhee, <em>Heteropneustes fossilis</em> (Bloch)</td>
<td>Whole body</td>
<td>Cooked with black pepper and flesh consumed twice daily, for two weeks</td>
<td>Pain, Wound healing, Impotency</td>
</tr>
<tr>
<td></td>
<td>Flesh</td>
<td>Cooked with light spices, soup taken in the morning and flesh consumed twice daily, for about one week.</td>
<td>Asthma, Breathing problem</td>
</tr>
<tr>
<td>Pardhin,</td>
<td></td>
<td>Warm fat massaged on the lumbo-sacral region at</td>
<td>Loss of erectile power</td>
</tr>
</tbody>
</table>

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Table 2. Medicinal use of Some Amphibians by Tharu tribes of Devipatan division of U.P.

<table>
<thead>
<tr>
<th>Name of Amphibians</th>
<th>Part (s) used</th>
<th>Mode of application</th>
<th>Nature of Ailments/diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frog, <em>Rana tigrina</em> (Linnaeus)</td>
<td>Flesh</td>
<td>Cooked fleshed is consumed once daily, for 6 weeks.</td>
<td>Asthma’ Whooping cough’ Improve vigour</td>
</tr>
<tr>
<td></td>
<td>Fat</td>
<td>Warmed and applied externally twice daily, for 2 weeks.</td>
<td>Paralysis, Rheumatism</td>
</tr>
<tr>
<td></td>
<td>Bile</td>
<td>Warmed with mixed mustard oil and massaged over joints once daily, till the disease is cured.</td>
<td>Hyperpyrexia (Very High fever)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Applied on forehead twice daily, for 3-4 days.</td>
<td>Abscess, Night blindness</td>
</tr>
<tr>
<td></td>
<td>Skin</td>
<td>Applied as eye ointment regularly at bed time, for about 2 weeks.</td>
<td>Liver Problem</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dilute in water and take orally twice daily, for 2 weeks.</td>
<td></td>
</tr>
<tr>
<td>Toad, <em>Bufo sp.</em> (Linnaeus)</td>
<td>Heart &amp; Blood</td>
<td>4-5 drops of bile diluted in a glass of water and drink in the empty stomach once daily, for 2 weeks.</td>
<td>Burn wound Jaundice</td>
</tr>
<tr>
<td></td>
<td>Skin</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bile</td>
<td></td>
<td>Pneumonia</td>
</tr>
</tbody>
</table>

**Wallago attu** (Schneider)  
Fat  
bed time once daily, for 6 weeks, thrice daily, for three weeks.  
Warmed and applied externally 2-3 times daily for about 3-4 days.  
Burn, Wound, Foot cracks, Asthma,

**Angler catfish**  
*Chaca chaca* (Hamilton)  
Flesh  
Dried fish grinded and take with water once daily, for 4 weeks.

<table>
<thead>
<tr>
<th>Name of Amphibians</th>
<th>Part (s) used</th>
<th>Mode of application</th>
<th>Nature of Ailments/diseases</th>
</tr>
</thead>
</table>
| *Sal* (Girai),  
*Channa punctatus* (Bloch) | Whole body | Oil extract applied on the eyes once daily, for one week. | Eye-ailments |
| | Flesh | Cooked with light spices, soup taken in the morning and flesh consumed twice daily, for about one week. | General weakness, Tuberculosis |
| *Saure* (Girai),  
*Channa striatus* (Bloch) | Whole body | Boiled in water and soup taken twice daily, for 6-8 weeks. | Diabetes, Pain, High BP |
| *Girai Channa gachua* (Hamilton) | Whole body | Dried powder mixed with honey and consumed once daily, for 4 weeks. | Asthma, Tuberculosis |
| | Flesh | Cooked with light spices and consumed twice daily, for 3 weeks. | Diabetes |
| | | Boiled with black pepper and soup taken once daily, for one week. | General debility, Malaria |
| | Mucus | Dermal secretions are scrapped, dried and transformed into pills and taken twice daily, for one week. | Menstrual irregularity |

**Order- Synbranchiformes**

<table>
<thead>
<tr>
<th>Name of Amphibians</th>
<th>Part (s) used</th>
<th>Mode of application</th>
<th>Nature of Ailments/diseases</th>
</tr>
</thead>
</table>
| *Kuchia* (Eel),  
*Amphipnous cuchia* (Hamilton) | Flesh & Blood | Cooked with light spices, Drink raw blood | Aneamia, Asthma, General weakness, |

Wallago attu  
(Schneider)  
Fat  
bed time once daily, for 6 weeks, thrice daily, for three weeks.  
Warmed and applied externally 2-3 times daily for about 3-4 days.  
Burn, Wound, Foot cracks, Asthma,
daily, for 2 weeks.

**Table 3. Medicinal use of Some Reptiles by Tharu tribes of Devipatan division of U.P.**

<table>
<thead>
<tr>
<th>Name of Reptiles</th>
<th>Part (s) used</th>
<th>Mode of application</th>
<th>Nature of Ailments/ Diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flying Frog, <em>Rhacophorus</em> sp.</td>
<td>Flesh</td>
<td>Boiled or cooked with light spices and consumed once daily, for 3 weeks.</td>
<td>Asthma, Bronchitis, Tuberculosis</td>
</tr>
<tr>
<td></td>
<td>Whole body</td>
<td>Chopped and wrapped around affected site 3-4 times for one day only.</td>
<td>Pneumonia, Asthma, Ribs pain</td>
</tr>
<tr>
<td></td>
<td>Bile</td>
<td>Applied on forehead twice daily, for 3-4 days.</td>
<td>Snake-bite</td>
</tr>
<tr>
<td>Tree frog, <em>Hyla</em> sp. (Laurenti)</td>
<td>Whole body</td>
<td>Chopped and wrapped around affected site 3-4 times for one day only.</td>
<td>Hyperpyrexia (Very High fiver)</td>
</tr>
</tbody>
</table>

**Indian Cobra, *Naja naja* (Linnaeus)**
- Fat: Boiled or cooked with light spices and consumed once daily, for 2 weeks.
- Gall Bladder: Raw gall bladder/ Bile taken orally once daily, for 3 days.
- Flesh: Cooked with light spices and given to the lactating women once daily, for 2 weeks.
- Fat: Warmed and massaged twice daily on affected area/joints/phallus, for about 8 weeks.
- Scale: Incinerated powder with honey once daily, for 4 weeks.
- Fat: Boiled with salt and soup taken once a week, till the disease is cured.
- Fat: Boiled or cooked with light spices and consumed once daily, for 3 weeks.
- Liver: Dried powder with water taken orally once daily, till the disease is cured.
- Fat: Warmed fat applied externally once daily, till the disease is cured.
- Fat: Cooked with light spices and eaten once daily.
- Scale: Incinerated powder with honey once daily, for 4 weeks.

**Viper, (Not specific)**
- Fat: Boiled or cooked with light spices and consumed once daily, for 3 weeks.
- Fat: Warmed and massaged twice daily on affected area/phallus, for about 8 weeks.
- Fat: Boiled with salt and soup taken once a week, till the disease is cured.
- Flesh: Cooked with light spices and given to the lactating women once daily, for 2 weeks.
- Fat: Warmed and massaged twice daily on affected area/phallus, for about 8 weeks.
- Fat: Boiled with salt and soup taken once a week, till the disease is cured.
- Fat: Boiled or cooked with light spices and consumed once daily, for 3 weeks.
- Liver: Dried powder with water taken orally once daily, till the disease is cured.
- Fat: Warmed fat applied externally once daily, till the disease is cured.
- Fat: Cooked with light spices and eaten once daily.
- Scale: Incinerated powder with honey once daily, for 4 weeks.

**Rat snake, *Ptyas mucosus* (Linnaeus)**
- Fat: Boiled or cooked with light spices and consumed once daily, for 3 weeks.
- Fat: Warmed and massaged twice daily on affected area/phallus, for about 8 weeks.
- Fat: Boiled with salt and soup taken once a week, till the disease is cured.
- Fat: Boiled or cooked with light spices and consumed once daily, for 3 weeks.
- Liver: Dried powder with water taken orally once daily, till the disease is cured.
- Fat: Warmed fat applied externally once daily, till the disease is cured.
- Fat: Cooked with light spices and eaten once daily.
- Scale: Incinerated powder with honey once daily, for 4 weeks.

**Python, *Python malarius* (Linnaeus)**
- Fat: Boiled or cooked with light spices and consumed once daily, for 3 weeks.
- Fat: Warmed and massaged twice daily on affected area/phallus, for about 8 weeks.
- Fat: Boiled with salt and soup taken once a week, till the disease is cured.
- Fat: Boiled or cooked with light spices and consumed once daily, for 3 weeks.
- Liver: Dried powder with water taken orally once daily, till the disease is cured.
- Fat: Warmed fat applied externally once daily, till the disease is cured.
- Fat: Cooked with light spices and eaten once daily.
- Scale: Incinerated powder with honey once daily, for 4 weeks.

**Indian Mabuya, *Eutropis carinata* (Schneider)**
- Flesh: Boiled with salt and soup taken orally.
- Whole body: Cooked and consumed once a week, for 4 weeks.
- Flesh: Boiled with salt and soup taken orally.
- Whole body: Cooked and consumed once a week, for 4 weeks.
- Flesh: Boiled with salt and soup taken orally.
- Whole body: Cooked and consumed once a week, for 4 weeks.
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- Flesh: Boiled with salt and soup taken orally.
- Whole body: Cooked and consumed once a week, for 4 weeks.

**Indian spiny-tailed lizards, *Uromastix* sp.**
- Fat: Rubbed the oil extract on lumbo-sacral region once daily, for 5 weeks.
- Fat: Rubbed the oil extract on lumbo-sacral region once daily, for 5 weeks.
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**Indian wall lizard, *Hemidactylus* sp. (Ruppell)**
- Flesh: Flesh is inserted in banana and eats orally twice daily.
- Whole body: Fried in mustard oil, extract is applied over affected sites twice daily, till the disease is cured.
- Flesh: Flesh is inserted in banana and eats orally twice daily.
- Whole body: Fried in mustard oil, extract is applied over affected sites twice daily, till the disease is cured.
- Flesh: Flesh is inserted in banana and eats orally twice daily.
- Whole body: Fried in mustard oil, extract is applied over affected sites twice daily, till the disease is cured.
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The information collected during interview revealed that Tharu tribes of Davipatan division were used whole body/ flesh/ liver/ gall bladder/ fat/ teeth/ scales/ mucus of 11 fish species to treat various human diseases viz. asthma, Whooping cough, Bronchitis, tuberculosis, diabetes, gastric problem, impotency, eyes problems, high blood pressure, malaria, anaemia and general weakness etc. The use of whole body or body’s parts and their byproduct of number of fishes were used as drugs to treat different diseases by different ethnic communities of different geographical regions in India (Borah & Prasad, 2017; Gupta & Kyparisis, 1987; Jamir & Lal, 2005; Joseph, 1982) reported that otoliths, hard calcium carbonate bodies present in the internal ear of fish, Pseudosciaena coito (Hamilton) belongs to family Scianidae and order Perciformes was used by tribe of Banda district of U.P. for the curing the rickets among children and stone trouble and blockages in urinary passage. In the present study, out of two 11 species 2 species are very rare and comes under the endangered category. This finding demonstrates the importance of local faunal diversity in furnishing folk medicine as suggested by Alves & Rosa, (2007) who observed that faunal composition, accessibility and availability directly influence the type of zootherapeutic resources used in any given region.

The information from tharu tribes of Davipatan division revealed that they were used whole body, flesh, skin, heart, blood, bile and fat of 4 species of amphibians for the treatment of asthma, Whooping cough, pneumonia, hyperpyrexia, jaundice, rheumatic-joint pain, piles and skin diseases etc. The use of whole body and their body parts of amphibians were used as drugs to treat different diseases by different ethnic communities of different geographical regions in India (Borah & Prasad, 2017; Dixit et al., 2010; Jamir & Lal, 2005). The information from tharu tribes of Davipatan division revealed that they were used whole body, flesh, liver and fat of 9 species of reptiles for the treatment of asthma, Bronchitis, Tuberculosis, pneumonia, rheumatic-joint pain, piles and skin diseases etc. The use of whole body and their body parts of reptiles were used as drugs to treat different diseases by different ethnic communities of different geographical regions in India (Borah & Prasad, 2017; Dixit et al., 2010; Jamir & Lal, 2005). The medico-ethnozoological data collected during survey from tharu tribes of the Davipatan division of Uttar Pradesh revealed fascinating information regarding the medical applications of different parts of amniotes animals and their byproducts might serve as potential sources in curing a wide spectrum of ailments. It is pertinent that tharu tribe is not alone that uses the various species of animals as potential sources of drug that heals various kinds of ailments. Similar practice has also been reported in many other tribal communities from the Indian subcontinent and abroad (Jamir & Lal, 2005). On the basis of information collected during interview it is come to know that tharu tribes believes in sustainable use of natural resources but with the interference of modern man in consumption of animal origin drugs has led to large scale killing of some rare and endangered wild life species threatening their extension.

CONCLUSION

Use of different body parts of amniotes animals and their byproducts for indigenous medicinal purposes in the study site is the main primary health care system. This study is the first effort to document the traditional zootherapeutic knowledge common among the indigenous inhabitants of Indo-Nepal border of eastern Uttar Pradesh. Traditional knowledge is not only significant for its pharmacological value, but also related with different cultural beliefs and sentiments of the indigenous people. This study provides the base for further scientific validation of the therapeutic efficacy of various zootherapeutic traditional uses by these people and finding novel biological compound(s) towards discovery of new drugs. This may also help in better understanding of traditional zootherapeutic medicine, its interrelationship with the socioeconomic and ecological values of the region, biodiversity conservation and management strategies of animal resources for sustainable use.

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The authors are thankful to the local healers (Guruwa) and village headmen of different villages of Tharu tribes whose cooperation during information collection could make the preparation of this manuscript possible.

REFERENCES


