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Study on the use of animal products based medicine used by the traditional healers of Darrang District, Assam India

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Abstract
Ethnozoology examines the relationship between humans and animals, focusing on traditional medicinal practices. This study documents the use of animals and their by-products by traditional healers in Darrang district. A total of 24 animal species from diverse taxonomic groups were recorded for treating ailments such as jaundice, asthma, and slurred speech. Mammalia showed the highest Use Value (0.38), indicating their dominant role in traditional medicine, followed by pisces and insects. Conservation assessment revealed the presence of threatened species, raising ecological concerns. The study highlights the importance of ethnozoological knowledge in primary healthcare and emphasizes the need for its documentation, sustainable utilization, and conservation for future pharmacological applications.

Keywords: Ethnozoology, animal products, medicine and traditional healers

Introduction

Traditional medicine, also known as indigenous or folk medicine, involves the use of plants, animals, and their by-products for the treatment of various diseases by ethnic communities. It varies across regions due to differences in biodiversity, culture, and traditional beliefs, and represents knowledge transmitted orally through generations. In India, traditional systems such as Ayurveda and Unani medicine incorporate animal-derived substances as an important component of healthcare practices. Traditional medicine serves as a primary source of healthcare for nearly 70–80% of the rural population worldwide, particularly in developing countries (Chhetri *et al*., 2020). The dependence on traditional medicine is higher in developing nations (60–90%) compared to developed countries (23–80%) (WHO, 2014). As a result, indigenous medicinal knowledge plays a crucial role in healthcare delivery systems (WHO, 1993). The therapeutic use of animals and their by-products, known as zootherapy, involves the use of body parts, metabolic products, and animal-derived materials such as honey and eggs (Costa Neto, 2005; Yirga et al., 2011). Zootherapeutic practices in India have been documented in classical texts such as Charaka Samhita. Approximately 15–20% of Ayurveda formulations are based on animal-derived substances (Unnikrishnan, 1998), while the Unani medicine system describes around 200 drugs of animal origin (Sharma, 1996). Animals and their by-products are used for treating various ailments such as asthma, jaundice, weakness, and speech disorders, and also hold significance in food practices, religious rituals, and mysticism (Holland, 1994; Simoons, 1974; Lev, 2006; Ishaq and Adil, 2021). In Assam, indigenous communities possess rich ethnozoological knowledge that is primarily transmitted orally from one generation to another. However, this knowledge is gradually declining due to urbanization and the loss of knowledgeable elders. Therefore, documentation and scientific validation of traditional practices are essential for preserving this cultural heritage and exploring new possibilities for drug discovery. At the same time, sustainable utilization of animal resources must be ensured to maintain ecological balance and biodiversity conservation.

Materials and Methods

The data for the present study were collected through field surveys conducted between October 2024 and June 2025 in different villages and nearby markets of Darrang district. Information was gathered using semi-structured questionnaires focusing on traditional medicinal knowledge related to the use of animals and their by-products. Informants belonging to the age group of 20–82 years, including traditional healers such as the ‘Bej’ or ‘Vaidya’, were interviewed. The questionnaire included details on animal species used, parts utilized, source of materials, local names, methods of preparation, and modes of administration. Additionally, group discussions were conducted among individuals with similar cultural backgrounds to validate and supplement the collected information. The respondents reported that their knowledge of traditional medicine was primarily inherited through generations. The collected data were compiled, organized, and analyzed using descriptive statistical methods. Use-

Value (UV) Index: It is a numerical indicator of how important a particular animal species is to the community.

Results

This study provides insight into the ethno-zoological practices of traditional healers in the Darrang district, Assam, highlighting the diverse array of animal species used in traditional medicine. Our survey found that out of the total animal species (24) used 10 animals (41.67%) belonged to invertebrates and 14 animals (58.33%) to vertebrates. Within the invertebrate group, 4.17% of the animals belonged to the Arthropoda, 8.33% under Gastropods, 8.33% under Annelida and 20.83% under Insecta. Among vertebrates, 12.5% were classified under Mammalia, 33.33% under Pisces, 4.17% under Reptilia and 8.33% under Aves. The conservative status of the species indicates that three species (12.5%) are under the category of data deficient (DD), two species (8.33%) is endangered (EN), sixteen species (66.67%) are least concern (LC**),** one species (4.17%) is vulnerable (VU), one species (4.17%) are near threatened (NT) and one species (4.17%) is not evaluated (NE). Mammals exhibits the highest Use Value index (average) of 0.38, suggesting that mammals are the most utilized by traditional healers among the listed taxonomic groups. Mammals are followed closely by Pisces with a Use Value index of 0.36, and Insecta with 0.32, while Gastropods (0.30), Aves (0.30), Annelids (0.23), Reptilia and Arthropoda show relatively lower (0.13) Use Value indices. The analysis of taxonomic groups reveals distinct mean values and standard deviations. Mammals have the highest mean value of 5.67 with a standard deviation of 2.51, indicating significant variability. Fish have a mean value of 5.3 with a standard deviation of 2.82, suggesting consistency. Other groups' mean values and standard deviations are: Insects (4.8, 0.45), birds and gastropods (4.5, 0.71), annelids (3.5, 3.54), and reptiles and arthropods (2, unknown SD). These findings highlight the diversity and consistency within different taxonomic groups. Table1: Showing Animals by-products used by the different traditional healers of Darrang district, Assam, India.

Discussion

This study provides insight into the ethno-zoological practices of traditional healers in the Darrang district, Assam, highlighting the diverse array of animal species used in traditional medicine. Our survey found that out of the total animal species (24) used 10 animals (41.67%) belonged to invertebrates and 14 animals (58.33%) to vertebrates. All analysis of taxonomic groups reveals distinct mean values and standard deviations. Mammals have the highest mean value of 5.67 with a standard deviation of 2.51, indicating significant variability. Pisces have a mean value of 5.3 with a relatively low standard deviation of 2.82, suggesting consistency. These findings highlight the diversity and consistency within different taxonomic groups. In Assam's Darrang district, traditional healers play a vital role in healthcare, utilizing ancient remedies that have been passed down through generations to address a range of health issues. This traditional approach is rooted in cultural beliefs and values, showcasing rich ethno-zoological knowledge, particularly in using animal-based remedies. The use of animal-based remedies in traditional medicine is not only a reflection of the community's cultural heritage but also a testament to the resourcefulness and ingenuity of traditional healers. These remedies often involve the use of locally available materials, reducing reliance on external resources and promoting sustainability. Preserving traditional knowledge is crucial as it can lead to new medical discoveries. By studying and validating traditional practices, researchers can find new compounds and develop effective treatments. This blend of old and new knowledge can improve healthcare outcomes. Furthermore, understanding the ecological and socio-economic implications of traditional medicine can inform biodiversity conservation and sustainable resource management. This knowledge can help policymakers develop strategies to balance the preservation of traditional practices with the need to protect endangered species and ecosystems. By bridging traditional medicine with modern healthcare, we can create a more compassionate and inclusive system that values cultural diversity and promotes overall well- being. This approach can lead to better health outcomes, increased patient satisfaction, and more effective care that addresses the unique needs of diverse communities. Ultimately, it can enrich the lives of individuals and foster a more holistic understanding of health and wellness. At last, this research provides a foundation for future studies and potential collaborations between traditional healers and modern medical practitioners, promoting a more inclusive and diverse approach to healthcare. This approach can ultimately enrich the lives of individuals in the Darrang district and beyond.

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Conflict of Interest: The authors have no conflicts of Interest. The study was non-destructive in nature and based on historical information, traditional knowledge, and photographic documentation. No animals were harmed, collected, or disturbed during the course of the research.

Table1: Animals by-products used by the different traditional healers of Darrang district, Assam, India

Sl no.	Taxonomic group	Common Name	Scientific Name	Local Name	No. of Responds	Parts used/ Product use	Medicinal use	Method of Administration
1.	Insect	Indian Honey Bee	*Apies cerana indica*	Mou	4	Honey	Cough and Common cold	Honey is prescribed with ginger and the sap of Oscimum sanctum (tulsi) leaf
2.		Silkworm	*Samia recini*	Eripolu	5	Pupa	Malnutrition	Cook and Consume
3.		Green Tea Ant	*Oecphylla spp.*	Amlori Paruwa	5	Whole Body	Sinusits	Green tea and mixed with Durun bon (Leucasaspera) is prescribed to consume
4.		Firefly	*Photinus sp.*	Jonaki porua	5	Whole body	Night-blindness	Inserted into a Malbhog banana and prescribed to eat
5.		Grasshopper	*Oxya chinensis*	Foring	5	As a whole	Nutrition	Can be roasted or sautéed and eaten as a nutritious snack
6.	Annelida	Earth- Worm	*Metaphire houletti*	Bunda Kesu	1	Whole Body	Piles	Head of earthworm is burned, powdered and mixed with coconut oil and a paste is made, which is gently applied on area
7.	Annelida	Leech	*Hirudinaria granulosa*	Juk	6	As a whole	Skin disorders	Used directly to the affected skin area to draw out Impure blood
8.	Gastropoda	Money Cowrie	*Monetaria moneta*	Cori	5	Shell	Spiritual Belief	Worn as a locket to prevent super natural power mainly in case of children
9.		Apple Snail	*Pila globosa*	Shamuk	4	Flesh	For better improvement of eye	Fresh water snail cooked with split black gram and prescribed to eat for 1 month
10.	Arthropoda	Crab	*Sartoriana trilobata*	Kakara	2	Meat	Jaundice	Cook and eat
11.	Fish	Tank goby	*Glossosobius giuris*	Panimutura	2	As a whole	Disease of passing urine while asleep	Cook and eat
12.		Asian Swampeel	*Monopterus albus*	Cuchia	3	Whole Body	Anemia	Cook and Eat
13.		Stinging Catfish	*Heteropneustes fossilis*	Singimaas	4	Whole body	Weakness ,Wound Healing	Cook with black pepper and eat
14.		Indian carplet	*Amblypharyngod on mola*	Moa maas	4	Whole body	For better improvement of eye power	Cook and eat
15.		Freshwater gar fish	*Xenentodon cancila*	Kokila maas	4	Mouth part along with the teeth	Haematoma, bruise injury	Dried the mouth part and with the help of the teeth drain out the clotted blood

16.		Walking catfish	*Clarius batrachus*	Magur maas	8	As a whole	Chicken pox	Cook and eat
17.		Spotted snakehead fish	*Channa punctatus*	Goroi maas	9	Whole body	Burn treatment	Smoked fish is prescribed to eat
18.		Freshwater shark	*Wallago attu*	Borali maas	9	Teeth	Skin abscess	Dried teeth used to drain out clotted blood
19.	Reptilia	Asiatic Water snake	*Fowlea piscatar*	Dhora saap	2	Bone	Spiritual Belief	Used as an amulet
20.	Bird	Pigeon	*Columbidae*	Pawr a	5	Meat	Low BP	Cook and Eat
21.		White breasted waterhen	*Amaurornis phoenicurus*	Dauk sorei	4	Whole body	Body pain	Cook and eat
22.	Mammalia	Cow	*Bostaurus*	Goru	3	Urine	Spiritual belief	To perform some rituals
					3	Bone	Spiritual belief	Keep inside the house
23.		Goat	*Capra aegagrushircus*	Sageli	2	Tongue	Slurred speech	Tongue is burned and ash is made into paste and eaten
					6	Bone	Weakness alleviation	Soup is prescribed to eat
24.		Pig	*Susscrofa domesticus*	Gahori	3	Fats (Oil)	Joint Pain	Oil is apply to the pain area for massaged

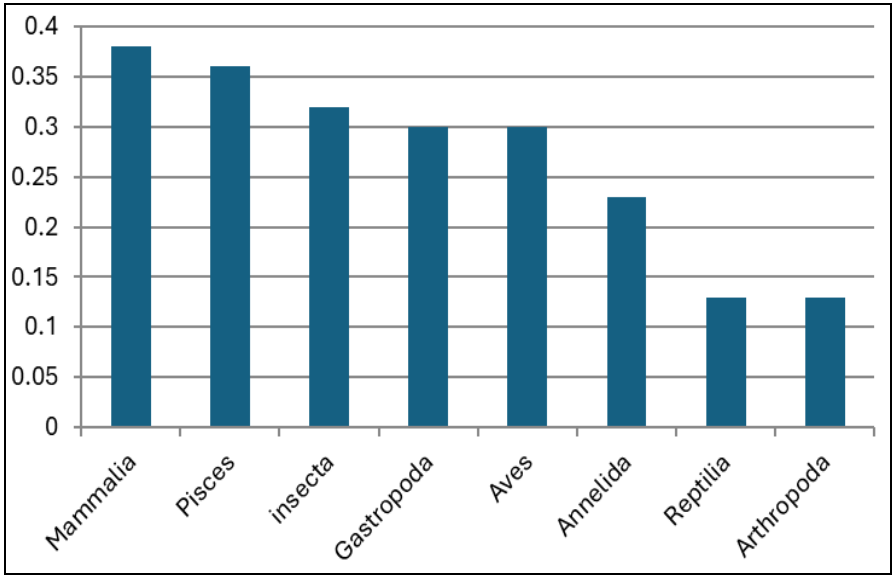

Fig 1: Average UV index of animals used as ethno-medicine in the surveyed area

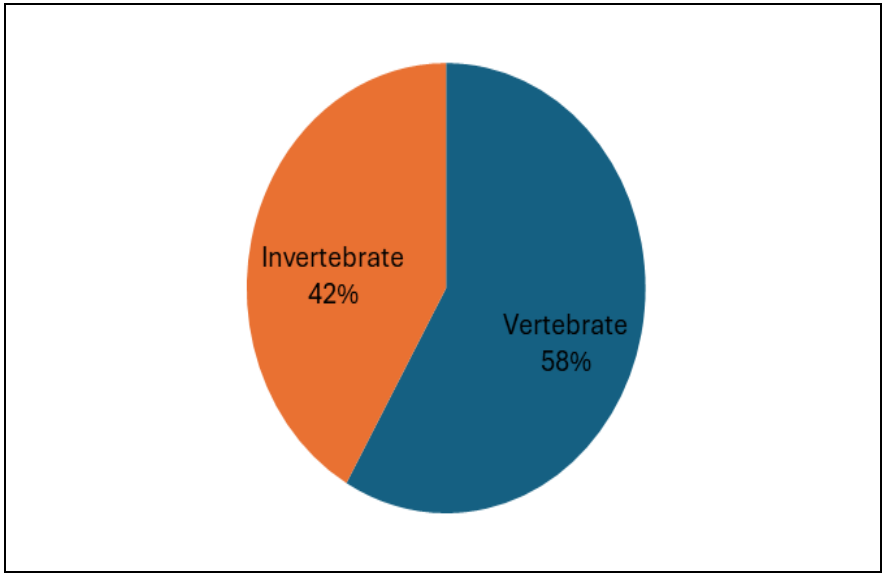

Fig 2: Percentage of the vertebrates and invertebrates used in making traditional medicine

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