



Patterns of animal-based ethnotherapeutic practices among aboriginals of Assam: An overview

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Abstract

Ethnotherapeutic practices are the vital segment of indigenous healthcare systems in Northeast India, where cultural variations is strongly observed and the use of animals and their derivatives for healing is a considered as first line treatments. Inhabited by more than 20 tribal groups, indigenous people of Assam preserves a proud inheritance of zootherapy. This review critically goes through the published literatures on animal-based ethnomedicinal practices in Assam and documents a total of 31 ubiquitous species from fishes, mammals, birds, reptiles, insects, and molluscs which are traditionally employed to treat health issues such as fever, jaundice, asthma, gastrointestinal disorders, gynecological conditions, and postnatal weakness. Studies reveal that there is a predominance of ichthyofauna, especially species belonging to Cyprinidae and Channidae families. Inspite of their wide cultural acceptance, most of the zoopractices lack pharmacological validation, limits their integration into evidence-based medicine and makes them scientifically less potential for treatments and raises limitation for safety. Moreover, several species recorded are categorized as threatened under the IUCN Red List, highlighting urgent conservation concerns.

Keywords: Zootherapy, Animal - derivatives, Folk medicine, Assam

Introduction

From the ancient times, flora and fauna of Globe provides ecosystem services to human health. As the time passes, these are revamped to traditional knowledge and heritage, hence passed from

generation to generation among aboriginals. Today we embrace them as “folk medicine” and they have higher potential for both healing and contemporary research. The World Health Organization (WHO) describes traditional medicine as "the sum total of the knowledge,

skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, used in the maintenance of health as well as in the prevention, diagnosis, improvement, and treatment of physical and mental illness (WHO, 2023). It again explained in india, colombia, chile about 65%, 40% and 71% of population used folk medicinal knowledge for the primary requirements health. Another survey done by WHO in 2019 revealed that upto 75% people of Africa ad North America living with AIDS mostly rely on folk medicine alone or in amalgamation with other medicines. Basically these are considered as first line treatment for health and wellness (Bagra et al., 2021). Both plant and animal based medicines possess approximately equal significance in healing various health problems. It is seen that 70 to 80 percent of rural persons of world use this bioresources as primary healers. Similarly, about 15 to 20% medicines of ayurvedic practices contains animal-derived products, bringing out immense utilisation of animals and their body parts and products (Borah et al., 2017). Unnikrishnan, in his study (1998), mentioned that animals parts and products are classified as panca gavya, ksirastaka, mutrastaka, yamaka, trisneha, catusneha etc. Panca gavya embraces five cow products- urine, faecal matter, milk, curd and ghee. This Panca gavya is widely used in nervous system related health issues such as epilepsy, neurosis, nervous degeneration etc. Mahawar and Jaruli, in 2009, documented that approximately 109 animals were advocated for this goals in several places of India. Again, it is not like that animals and their body parts are used to cure human ailments, many animals are also preferred by indigenous people to treat diseases of livestock. This has been investigated in semi-arid region of NE Brazil by Confessor et al., (2009).

Northeast region is home to various tribes or indigenous individuals. Their knowledge, their culture are key resources for various group of people as well as for preserving biodiversity. Their knowledge also help person to decode heritage of each tribes. Assam is also inhabited by different tribes like Karbi, Bodo, Dimasa, Ahom, Deori, Kachari, Tiwa, Garo, Missing etc. which make it a mosaic of culture as well as knowledge.

According to the 2011 census, tribal people in Assam comprise 12.4% of the total population of Assam. These tribes not only utilise medicinal plants but also whole animals or parts of it for therapeutic purposes. Deori people of dhemaji district favour kesu (earthworm,) mou makhi (honey bee), ketela pohu (porcupine) and different kinds of fishes etc. for their healthcare processes. Total 17 species are used by these people for various health issues (Gogoi & Borah, 2020). Ichthyotherapeutic practices are the most common therapeutic procedures in Assam as well as other states of Northeastern regions of India. Most of the people prefer fishes from cyprinidae family, followed by channidae. These are basically utilise for healing wounds, anaemia, body pain, fever etc. (Sonar et al., 2025, Khesoh et al., 2025). Again for different respiratory diseases like asthma total 18 species are recorded, out of which 6 are mammals, 8 are insects and others belong to pieces, molluscs and amphibians (Chetia & Das, 2022). Each and every tribes of assam and other Northeastern states has its own knowledge regarding different therapeutic methods and they mostly prefer mammalian species for most of health issues like dysentery, jaundice, cough, cold etc. (Hussain et al., 2021). However, not alone animals and their parts, various parts of plants are also use in folk medicines and traditional healing process. Tai-ahom individuals of assam also utilises ordinary animals just like other indigenous habitants for various healthcare purposes. They, furthermore, favours plants like “sarpagandha”, “kordoi”, “teteli”, “dubori bon”, root of “jobaphul” in dried powder form, dried bark of “ashok phul” in powder form, jhamu” etc. to cure different illness or disorders (Gogoi & Begum, 2025). This study basically focus on some ubiquitous zootherapeutic practices seen in Assam among numerous races.

Materials and Methods

For this study, data related to the tittle are gathered from different literatures after reviewing them thoroughly in context of the topic. An extensive survey is done from several databases like Pubmed, Google Scholar, Researchgate,

Sodhganga etc. Again, search terms include “zootherapeutic”, “ethnozootherapy”, “Northeast India”, “Folk medicine” etc. Most of the research papers listed primary data and researchers employed many methods like interviews, questionnaires etc. for collection of the data regarding various zootherapeutic healing process. Some researchers also included which part of the body used or which animal derivatives or products are used in healing treatments of different health issues and mode of preparation of medicine in their works.

This review simply embraces following points-

- A. Animal species and their taxonomic identity
- B. Local names of animals
- C. Which Body parts/products are preferred
- D. Ailments treated by employing animals parts/products
- E. Tribes that employed zootherapeutics

Results and Discussion

This review study highlighted most commonly used animals and their body parts or their products for therapeutic purposes of various health issues like jaundice, TB, dysentery, blood pressure, common fever etc. by the indigenous persons. It is seen that most of the indigenous people prefer ichthyofauna as they advocate healing treatments of many diseases, from common cold to post operative recovery. For instance, “kawoi” is used for curement of post-operative conditions by mishimi tribe; “magur” fish is used for pox etc. Again, “kokila” fish (*Xenentodon cancila*) has been used as surgical device for alleviating bruises. Therefore, It can be said that from invertebrates (insects, leech) to vertebrates (mammals, birds) animals and their body parts possess therapeutic properties. Table 1 and table 2 are the list of some commonly used animals for medicinal practices among aboriginals of Assam as well as list of tribes that preferred zootherapeutic practices along with the numbers of animal species in this process. A total of 31 animal species are documented in this review and total 7 tribes of different regions of Assam are reported in this context till the date.

Table1: List of some frequently seen animals in zootherapeutic process along with ailments that they treated

Sl no	Animal (local name)	Scientific name	Family	Parts of body	Disease treated
1	Singee	<i>Heteropneustes fossilis</i>	Heteropneustidae	Flesh, dried fish	Anaemia, fever, jaundice etc.
2	Rou	<i>Labeo rohita</i>	Cyprinidae	Flesh	Stomach issues, post-delivery recovery
3	Kawoi	<i>Anabas testudineus</i>	Anabantidae	Flesh	General weakness, post operative recovery, Dysmenorrhea
4	Cuchia	<i>Monopterusuchia</i>	Synbranchidae	Flesh	Weakness, anemia, jaundice
5	Magur	<i>Clarias batrachus</i>	Clariidae	Flesh	Diarrhea, anemia, smallpox, weakness
6	Turi	<i>Macrogynathus pancalus</i>	Mastacembelidae	Flesh, dried fish	Common fever, for strength
7	Goroi	<i>Channa punctata</i>	Channidae	Flesh	Malaria, weakness, post-birth recovery

8	Dorikona	<i>Esomus danricus</i>	Cyprinidae	Flesh	Increase eyesight, Elevate lactation
9	Mirika	<i>Cirrhinus mrigala</i>	Cyprinidae	Dried fish	Malaria
10	Kokila	<i>Xenentodon cancila</i>	Channidae	Dried fish	Headache reliever
11	Xamuk (Apple snail)	<i>Pila globosa</i>	Ampullaridae	Flesh (roasted, raw) Mucin	Asthma, Tuberculosis, better eyesight Skin texture improvement
12	Ketela pohu (Porcupine)	<i>Hystrix sp.</i>	Hystriidae	Hide Bile Alimentary canal	Stroke Dysentery Pre-menstrual pain
13	Neul (Mongoose)	<i>Herpestes javanicus</i>	Herpestidae	Meat (cooked)	Dysentery, malaria, asthma etc.
14	Feti xap (Cobra)	<i>Ophiophagus hannah</i>	Elapidae	Venom	Snake biting
15	Mou makhi (Honey bee)	<i>Apis cerena indica</i>	Apidae	Whole body Honey Bee wax	Cancer Cough reliever, skin related problem Earache, joint pain
16	Kumoti	<i>Scaptericus borellii</i>	Gryllotalapidae	Alimentary canal(raw)	Intestinal worm
17	Amroli porua	<i>Oecophylla smaragdina</i>	Formicidae	Fried ant Raw ant	Epitapix Sinus
18	Gagini foring (Praying mantis)	<i>Mantis religiosa</i>	Mantidae	Cocoon Whole body	Otorrhea Pneumonia
19	Bonda kesu	<i>Metaphire houleitti</i>	Megascolecidae	Whole body	Vocal chord infection
20	Moh (Buffalo)	<i>Bubalus bubalis</i>	Bovidae	Burned horn	Pre menstrual pain
21	Horin (Deer)	<i>Rucervus duvaucelii</i>	Carvidae	Horn (smoke of burned horn)	Piles
22	Sunga baduli (Fruit bat)	<i>Pipistrellus coromandrs</i>	Vespertilionidae	Blood	Vomiting
23	Xiyal (Fox)	<i>Vulpes bengalensis</i>	Canidae	Cooked meat	Paralysis
24	Goru (Cow)	<i>Bos indicus</i>	Bovidae	Urine Milk	Epilepsy, leprosy, liver disorder Gastro-intestinal problem
25	Sagoli (Goat)	<i>Capra hircus</i>	Bovidae	Fat	Asthma,
26	Paaro sorai (Pigeon)	<i>Columba livia</i>	Columbidae	Meat Excreta	Increase blood pressure Typhoid, toothache

27	Manuh (Human)	<i>Homo sapiens</i>	Hominidae	Saliva Urine	Disinfectant for wound Skin disease, disinfectant, eye infection
28	Rongaa porua (Fire ant)	<i>Solenopsis spp.</i>	Formicidae	Whole body	Epilepsy
29	Poitasora (Cockroach)	<i>Periplaneta americana</i>	Blattidae	Whole body	Asthma, cough, TB
30	Gui (Bengal monitor)	<i>Varanus bengalensis</i>	Varanidae	Boiled meat	Skin disease, ring worm
31	Mokora (Spider)	<i>Heteropoda venatoria</i>	Sparassidae	Shed skin	Asthma, skin diseases, menorrhagia

(Source: Ahmed et al., 2013; Verma et al., 2014; Borah & Prasad, 2017; Khesoh et al., 2025)

Table2 : list of tribes of Assam and the no. of animals preferred in practices of zootherapy

Sl no	Name of tribes	Districts	No of species used	References
1	Baite tribe	Dima hasao	34	Betlu, S., 2013
2	Tai-ahom	Sivasagar	19	Bhuyan, D. D., 2015
3	Karbi tribe	Karbi anglong	48	Verma et al., 2014
4	Bodo tribe	Udalguri, Kokrajhar	42	Roy, M., 2024; Basumatary & Choudhury, 2023
5	Missing	Dhemaji	15	Paul. S, 2018
6	Deori	Dhemaji	17	Gogoi & Borah, 2020
7	Dimasa	Dima-hasao	15	Maitra & Thakuria, 2024

Cultural variations in therapeutic practices

The analysis reveals that all species reviewed in this monograph has exhibit diverse therapeutic characteristics with the quality to cure a lot of diseases. From horn to excreta, many animals' body parts and by-products are employed to heal a range of health ailments. However, their administration process and the preparation methods of the medicine is different from each others for the same cure. Each tribe has its own

preparation methods for same diseases. A prime example is honey or “mou”, obtained from “mou makhi”, which is used to treat respiratory problems, specifically cough. As a ubiquitous medicine, the administration of Honey is vary slightly among tribes or among communities; some tribes like Bodo, Mising etc. prefer it raw while other tribes (e.g. Nath community, Karbi people of Morigaon) use it with “Tulsi” leaves (Verma et al., 2014, Bora & Prasad, 2016). It is found by Basumatary & Choudhury, 2023 where

they studied ethnotherapeutic practices particularly on insect in Kokrajhar district that the fidelity rate for this insect is 100%. Tai-ahom people utilises a total of 21 species, including both chordates and non-chordates, in ethnotherapeutics practices which was reported by Bhuyan in 2015 during her survey period. Again Verma et al., 2014 found that most of the karbi people favours leech therapy which is used to cure piles, swelling of muscles by placing it on desired sites along with sucrose solution. Hence, the treatment process for a disease is highly diverse as well as culturally specific. Sonar et al., 2025 decoded that assamese either indigenous or non indigenous people mostly rely on ichthyofauna for curing different health issues. This is already illustrated by Basumatary et al., 2023 who studied ethnomedicinal practices in Bodo tribe in eight villages of Kokrajhar district where they found 34 different fish species from 20 different families were used for health benefits and therapeutic properties. They also detect that highest number of fish species belonged to the family Cyprinidae (20.59%), followed by Channidae (11.76%) and Ambassidae (8.82%). The highest use value (0.58) and relative frequency of citation (0.37) was recorded for *Heteropneustes fossilis* and most commonly mentioned diseases which are treated by different fishes were anaemia, gastrointestinal and integumentary disorders, and body weakness etc.

Ethnozootherapeutic practices in other regions

These animal-based ethnotherapeutic practices are not only confined to autocanthous communities of assam, but also observed among those of Northeast regions and other parts of the World. Similar studies have been seen in Wancho, Tangsa tribes (Jugli et al., 2019), Nyashi and Galo tribes (Chakraborti et al., 2011) of Arunachal Pradesh; Ao tribe (Kakati et al., 2006), Chakhesang tribe of Nagaland; Khasis of Meghalaya (Turniya & Prasad, 2017); Mech tribe of West Bengal (Sarkar et al., 2014) etc. whose natives practice these animal-based therapeutic processes to cure numerous ailments. Scholarly studies have captured these traditional practices in

details and it describes the cultural inconnetions among people of adjoining regions. For instance, Kakoti and Doulo (2002) found Chakhesang tribe of Nagaland uses of twelve mammals, one bird, one reptile, two amphibians, one fish, one mollusc, one annelid and four arthropods for treatment of various ailments. People from the Marmas tribe in Bangladesh also displayed a similar expertise in zootherapy and phytotherapy. In a study published by Jannat et al., 2019, six plants are identified as belonging to six different families and they are all useful in treating digestive tract disorders, piles, urinary tract disorders, pain, dizziness, irritation, and fever. As a cure for colds, which progressed to pneumonia, they used the skin of crabs, *Scylla serrata*, along with lemon juice. Another study observed by Adhikary et al., 2020 among different ethnic communities in the Chitwan-Annapurna landscape, Central Nepal is documented the ethno-medicinal knowledge related to vertebrate fauna where a total of 58 species of vertebrate animals were used to treat 62 types human ailments These data were collected by using semi-structured questionnaires and analysed by using Use value (UV), Informant Consensus Factor (ICF) and Fidelity level (FL). The species *Felis chaus* was extensively used with 3 used reports by 10 informates. A literature survey conducted by Aseefa et al., 2025 in the same context in Ethiopia, a total 112 animal species used to treat 167 different ailments were identified. Among these, mammals are the most frequently used, followed by birds, arthropods, and reptiles. Most remedies are sourced from wild animals, with treatments for serious diseases, including HIV/AIDS and cancer, being reported. The most commonly used animal parts for medicine preparation are meat and fat, followed by internal organs, with cooking being the predominant preparation method.

Table 3: list of a few tribes of India and no. of animals used in zootherapeutic practices by them

States	Name of tribes	No. of species	References
Arunachal Pradesh	Wancho, Tangsa, Nyishi, Galo, Apatani, Monpa	20–55	Chakraborti et al., 2011; Jugli et al., 2019
Meghalaya	Khasi, Garo, Jaintia	13-20	Turniya & Prasad, 2017
Nagaland	Ao, Chakhesang, Angami, Sema	18-26	Kakati et al., 2006
Mizoram	Lushai, Hmar, Paite, Mara	56	Lalramnghinglova, 2003
Manipur	Meitei, Tangkhul, Kuki, Hmar	20-30	Singh & Sharma, 2014
Tripura	Reang, Jamatia, Tripuri	15	Das, 2015
West bengal	Mech, Santhal, Oraon, Munda, Forest-dwelling communities	10- 35	Sarkar et al., 2014, Mondal et al., 2025
Jharkhand	Santhal, Ho, Munda, Oraon	20-25	Singh et al., 2012
Chattishgarh	Baiga, Gond	25-30	Jain et al., 2011
Odisha	Bonda, Kondh, Saora, Juang	30-40	Nair et al., 2013
Madhya pradesh	Bhil, Gond, Baiga	25-30	Mahawar & Jaroli, 2006
Rajasthan	Garasia, Bhil	15-20	Mahawar & Jaroli, 2006
Maharashtra	Tribes of northern Western Ghat, Tribes of Nandubar district	25-37	Zope et al., 2025, Patil et al., 2025
Uttar pradesh	Tharu	35	Kumar et al., 2024
Kerala	Kurumba, Irula, Paniya, Kani	12-20	Vijayakumar et al., 2015; Rajmohan et al., 2017
Goa	Gawda, Dhangar	19	Gaonkar et al., 2024

Research gap and scientific validation

Though these practices are commonly seen in rural as well as tribal communities-not only in Assam but in other states, countries-and have been passed down through generation to generation, many of these ethno-medicinal practices are scientifically unexplored, undocumented and unvalidated till now. This gap in scientific inquiry has led to a lack of formal

recognition as well as minimal integration of ethno-medicinal knowledge into mainstream healthcare systems. Furthermore, there are many more tribal communities which therapeutics practices are even uninvestigated and remains completely unstudied, unexploited. Therefore, it is essential that these practices are thoroughly investigated, documented and examined for further researches.

Conclusion

The Northeast region of India is the abode of about 145 tribes constituting around 12% of the Indian ethnic population (Daolagupu et al., 2021) and each tribe has its own culture, rituals, beliefs and some therapeutic practices utilizing medicinal plants and animals and their product to cure many ailments. These rich heritage have been passed down from generations to generations and continue to play a pivotal role in community healthcare services. These elderly beliefs regarding animal and plant based medicine has great potent to produce low cost effective therapeutic treatment for health issues. Scientific integration to these therapeutics knowledge could pave the way for development of low-cost medicines and also serve as an alternate path for healthcare solutions. Therefore, further research is essential to confirm and validate bioactive crude compounds present in those animal-based products and their efficacy and safety used in ethnotherapeutics practices by indigenous persons.

Moreover, some animals, preferred in ethnotherapeutics, are enlisted in endangered categories or threatened categories under IUCN Red List, signaling the need for urgent conservation measures. Therefore, one should keep the conservation strategy for those animals in mind, otherwise, excessive exploitation of animals creates an unbalanced ecosystem and eventually endangers existence of those species as well as threaten to their survival. So enlightenment of traditional practitioners and the user regarding the conservation of bioresources and protection of vulnerable ones is paramount so that ethnotherapeutic practices remain sustainable and not compromise biodiversity or ecosystem services.

Conflicts of interest:

There is no conflicts of interest between authors.

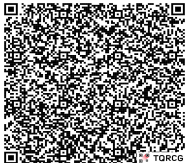
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Quick Response Code	
DOI: 10.22192/ijarbs.2025.12.10.004	

How to cite this article:

Madhusmita Talukdar, Dhanjita Mandal. (2025). Patterns of animal-based ethnotherapeutic practices among aboriginals of Assam: An overview. *Int. J. Adv. Res. Biol. Sci.* 12(10): 34-44.
DOI: <http://dx.doi.org/10.22192/ijarbs.2025.12.10.004>