



REVIEW ON ZOO-THERAPEUTICALLY USED ANIMALS AMONG THREE DIFFERENT TRIBES AND COMMUNITIES OF ASSAM

Zoology

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ABSTRACT

Through the ages, different castes and tribes of India uses different animals traditionally to treat various diseases. Various works had been done previously on usage of plants or plant products but compact data on zoo therapeutically usage of animals is not abundant. This review aims to view traditional usage of animals in different tribes and communities in context of Assam. Since the ages of Charak Samhita, usage of animal products is common in India. Due to the broad geographical distribution and varied historical background of different castes and communities, India is tilted now considered as the realm of ethno-biology and ethno medicine. Zoo therapeutic knowledge is centric to domestic animals mostly but some protected species like peacock are sometimes considered as zoo-therapeutic resource

KEYWORDS

Ethno zoology, Zoo-therapeutic, protected species, ethno-zoology, animal products.

INTRODUCTION

India had been a realm of diversity, not only it is rich in natural resources but also it is rich in so many tribes and communities. In different ethnic groups, since the time immemorial, usage of different faunal resources in therapeutic purpose is noted. The world Health Organization report (2005) estimates that more than six billion people rely primarily on animal and plant based medicines. Using faunal resource in curing human ailments is regarded as zoo-therapy (Costa-Netur EM.2005). Traditional knowledge of zoo-therapeutic usage of animals among ethnic groups passed from generation to generation. Although, actual science behind such usage remains unexplored yet, ethnic groups mostly rely on such resources. Knowledge variation across and within cultural groups has not yet been given due attention (Sonowal,C.J and Praharas,P, 2007). Nearly 15-20% of the Ayurvedic medicine is based on animal derived products(Holennavar.PS.2015). Research interest and activities in the area of ethno-biology and ethno medicine have increased tremendously since last decade (Holennavar.PS, 2015). Further studies are necessary to determine the presence of bioactive substances in these traditional ethno medicines. Zoo-therapy is an exploring field now a day globally but sustainable uses of animal resources are necessary.

GLOBAL TREND OF ANIMAL USE IN DIFFERENT TRIBES AND COMMUNITIES FOR THERAPEUTIC PURPOSE

Globally in most of the countries, especially those countries which harbour ancient civilizations, there therapeutic usage of animals is commonly seen. It includes head louse to leech to sometimes protected species like peacock. It is found that China uses around 1500 species of animals for therapeutic purpose. It is found that nearly 350 animal species (including 176 terrestrial vertebrates) are involved in traditional Brazilian medicine (SouzaJB, Alves.RRN, 2014). Starting from amphibian (Bufonidae family) to mammals (Myrmecophagidae) are used for treating rheumatism to allergy in various cases. In latin America, 584 medicinal animal species have been recorded (Alves and Rosa,2005; Alves and Alves.2011). In Mexico over 100 animal species have been recorded for medicinal purposes (Jacobo-Salcedo et al.2011). In Pakistan, a study was conducted in 2014-2015 in the vicinity of river Chenab ,reported usage of 28 bird species and 30 animal species to treat various disease including skin infection , sexual weakness etc among the inhabitants .In mammals 23% recipes were used to treat skin infection followed by sexual problems and rheumatic disorders(20 and 14 respectively), whereas for birds, highest percentage recipes were used to treat body weakness (Altaf et al.2017). Scales of Indian Pangolin, milk of goat is used as sexual tonic. Some species were found to be used in treating piles, Blood pressure, Head ache, Asthma (Altaf et al, 2017).It was found that Chinese use earthworms to treat diseases nearly 4000 years ago (Altaf et al., 2018). More than 500 species of invertebrates are used to cure both common and complex illness in India. Chitosan, derived from exoskeleton of insects are globally used as anticoagulant (Goodman.WG, 1989). Potential anticancer drugs have been derived from Asian Sulphur Butterfly and Taiwanese slag beetles (Kunin.W.E,1996).A FIELD SURVEY IN Santa Cruz do Capibaribe , Brazil suggests a total of 37

species including 29 families are found to be used to treat 51 different ailments (Alves et al.,2008). A ethno-biological study of Kala Chitta hills of Pakistan reports traditional usage of 65 animal species (Arshad et al,2014). A survey on Awajun community of Peru reports usage of at least 12 insect species including *Rhynchophorus palmarum*, *Atta cephalotes* being the most important (Lukus Pawera et al,2018). A survey on Burkina Faso of the Sudanian zone reveals usage of 7 edible insect species among the inhabitants(Aminata Sere et al,2018).Common Opposum is used as medicine for the people living in the Amazon (Flavio Bezerra,2014). Among the indigenous people of Metema Woreda, North Western Ethiopia , usage of 51 species of animals to treat 36 different ailment were noted. Among them, 27 are mammals, 9 species of birds, 7 species of arthropods, 6 species of reptiles and 1 species each of fish and annelids as reported (Fasil Adugna kendie et al,2018). Among the mestizo communities of San Juan, Argentina, it was found that total seven species of animals including lama, puma, lepus and their several body parts are used to treat 22 ailments (Jorge Hernandez et al.2015). Traditional usage of 18 invertebrate species to treat diseases of skin and subcutaneous tissue and infectious livestock disease ,disorders of eye and adnexa found in Spanish ethno-veterinary medicine (Jose Antonio Gonzalez,2016).A survey reveals a total of 31 animal species are used medicinally in Crato and Juazerio do Norte, Ceara, Brazil. It includes 8 species of insects, 7 species of mammals, 5 species of fish, 5 species of reptile and 4 species of birds to treat a total 24 ailments including rheumatism, asthma etc(Felipe S Ferreira et al, 2009). In the Mediterranean island of Sardinia,14 animal products are noted as ethno-medicine (Simonetta Bullitta et al,2018). So the global trend shows that animals are considered as integral part in ethno-medicine irrespective of different tribes, communities or their origin globally.

METHODOLOGY

In different parts of the north east India, ethno-zoological studies were conducted by different investigators involving different tribes and communities of that area. Most of the cases it includes a large sample size of local tribes and communities and they are interviewed with same set of questionnaire. Their answers are noted and compared with other collected data. Most of the cases ethno-zoological study is done community or tribe-wise separately. During such sampling large sample size is needed to avoid error in sampling process.

ETHNO-MEDICINAL USAGE OF ANIMALS AMONG DIFFERENT NORTH-EAST INDIAN TRIBES AND COMMUNITIES

1. AMONG TRIBES AND COMMUNITIES OF ASSAM:

A) MISSING TRIBES OF ASSAM- Missing tribes of Assam are mostly concentrated in the district of Dhemaji. They mostly uses 15 animals out of which 8 species of mammals,1 species of birds , 1 species of reptile, 4 fish species and 1 annelid. They use those for treating asthma, body pain, tuberculosis, jaundice, paralysis, piles, skin disease, allergy, weakness etc. The following table discusses usage of animals among missing tribes of Assam (after Sankar Paul, March,18)

Sl. No	Animal Group	Common Name	Scientific Name	Disease Treated	Parts Used	Prescription
1	Mammal	Bat	<i>Rhinchocephalus sp</i>	Asthma	Flesh	Burn and eaten with local wine
2	Mammal	Goat	<i>Capra sp</i>	Asthma	Urine	Drunk directly
3	Mammal	Buffalo	<i>Bubulus sp</i>	Body pain	Oil	Applied on affected area
4	Mammal	Pig	<i>Sus sacrofa</i>	Body pain	Fat oil	Applied on affected area
5	Mammal	Porcupine	<i>Hystrix sp</i>	Dysentery	Bile	Taken orally
6	Mammal	Monkey	<i>Maccaca sp</i>	Tuberculosis	Blood	Fresh blood taken orally
7	Mammal	Goat	<i>Capra sp</i>	Jaundice	Liver	Cooked and eaten
8	Mammal	River dolphin	<i>Platanista sp</i>	Body pain	Body oil	Used locally on affected area
9	Aves	Crow	<i>Corvus sp</i>	Paralysis	Flesh	Cooked and eaten
10	Reptilian	Turtle	<i>Chilonia sp</i>	Piles, skin disease	Flesh	Ash of flesh is applied on piles & in case of skin disease cooked and eaten
11	Fish	Palimutura	<i>Glossogobinus sp</i>	Disease of passing urine while asleep	Flesh	Cooked and eaten
12	Fish	Kuri	<i>Labeo sp</i>	Allergy	Whole body	Cooked with herbs
13	Fish	Eel	<i>Anguilla sp</i>	Weakness	Blood	Mixed with turmeric
14	Fish	Borali	<i>Wallago auto</i>	Asthma	Air-bladder	Used in relief from asthma
15	Annelid	Earthworm	<i>Pheretima sp</i>	Piles	Body	Ash+alkali extracted from banana

B) BIATE TRIBE OF DIMA-HASAO DISTRICT-

A study was conducted to address use of zoo-therapy among Biate tribe of Dima Hasao district of Assam by Sajem Betlu, 2013. 15 Biate villages were surveyed through set of questionnaires and informal

interview. The study documents 34 species for treatment of 34 different ailments. Those species includes at least 15 animals listed in the IUCN Red list. The following table shows the usage of different animals among Biate tribes-(After Sajem Betlu, 2013)

Sl. No	Class	Common Name	Parts Used	Dried/ Fresh	Disease Treated	Prescription
1	Reptilia	King Cobra	Gall bladder	Dried	Snake-bite, Diabetes	Eaten/swallowed whole
2	Reptilia	Python	Flesh, Fat	Dried or fresh, Fermented	Seizure, Sprain, Piles, Burns	Applied locally, Eaten cooked with vegetables
3	Reptilia	Monitor Lizard	Flesh	Dried	Jaundice	Cooked and eaten
4	Reptilia	Tokay Gecko	Flesh	Dried	Impotency	Cooked and eaten
5	Reptilia	Indian Pond Terrapin	Flesh	Fresh/Dried	Allergy	Cooked and eaten. No particular dosage
6	Malacostraca	Fresh water crab	Whole	Fresh	Jaundice	Crabs (especially small ones) are crushed to pulp. The juice extracted is mixed with a little water and boiled till it becomes half of the quantity and then taken. It is often cooked along with banana flower. No particular dosage.
7	Gastropoda	Snail	Whole	Fresh	Rheumatism and Sciatica	Inserted inside a banana for ease of ingestion and swallowed whole. 1 every day for 1 week
8	Gastropoda	Water snail	Flesh	Fresh	Jaundice	Cooked and eaten. No particular dosage
9	Insect	Bed bugs	Whole	Fresh	Malaria	3 bedbugs are swallowed whole, daily for 1 week. It is often inserted in a banana for ease of ingestion
10	Insect	Cockroach	Whole	Dried	Tuberculosis	Crushed and eaten. 3 every week for 1 month.
11	Aves	Jungle fowl	Fat	Fermented	Burns	Applied locally.
12	Aves	Jungle crow	Flesh	Dried or fresh	Health tonic for the aged	Cooked and eaten. No particular dosage
13	Aves	Wreathed Hornbill	Fat	Fermented	Burns	Applied locally
14	Aves	House Sparrow	Brain	Fresh	Impotency	Cooked and eaten. No particular dosage
15	Aves	Blue whistling Thrush	Flesh	Dried	Meat allergy	Cooked and eaten. No particular dosage
16	Aves	Great Hornbill	Fat	Fermented	Arthritis	Applied locally.
17	Aves	Hoopoe	Flesh	Dried	Gall bladder stone	Cooked and eaten. No particular dosage
18	Mammalia	Indian Pangolin	Scales	Dried	Hook-worm, Tuberculosis	1 scale, crushed to powder and taken with water
19	Mammalia	Golden Jackal	Flesh, Gall bladder	Fresh, Dried	Joint pain, Malaria	Cooked and eaten. No particular dosage
20	Mammalia	Barking Deer	Flesh	Dried or fresh	Easy conception	Cooked and eaten. No particular dosage
21	Mammalia	Bat	Flesh, Gall bladder	Dried	Eneuresis, Diabetes	Cooked and eaten, Swallowed whole
22	Mammalia	Sloth Bear	Gall bladder	Dried	Easy delivery of a child, Diabetes	Swallowed whole before delivery. 1 whole piece once.
23	Mammalia	Himalayan Black Bear	Gall bladder, Flesh	Dried	Easy delivery of a child, Diabetes, Tonic for pregnant women	Swallowed whole before delivery. 1 whole piece once
24	Mammalia	Hoolock Gibbon	Brain, Bone, Skull bone, Hand	Fresh, Dried	Tonic for pregnant women, Rheumatism, Hernia	Cooked and eaten. Believed to be an excellent health tonic especially for a pregnant women and her unborn child. Nodosage
25	Mammalia	Mainland Serow	Urine	Fresh	Diabetes	~ 5 ml once in a month
26	Mammalia	Slow Loris	Blood	Fresh warm	Chronic malaria	~ 100 ml of fresh blood is drunk while still warm

27	Mammalia	Dog	Blood	Fresh warm	Epilepsy	~ 50 ml fresh blood mixed with alcohol (preferably local rice beer) is taken once
28	Mammalia	The Assamese Macaque	Brain, Gall bladder, Smoked dried hand	Fresh, Dried	Diabetes, Mumps	Swallowed whole., It is used to tap gently in and around the affected area.
29	Mammalia	Indian Crested Porcupine	Flesh	Dried or fresh	Easy delivery of a child	Cooked and eaten. No dosage
30	Mammalia	Indian Crested Porcupine	Flesh	Dried or fresh	Easy delivery of a child	Cooked and eaten. No dosage
31	Mammalia	Smooth coated otter	Flesh	Dried or fresh	Fish bone stuck in the throat	Soup prepared is taken slowly. No dosage
32	Mammalia	Capped langur	Tongue	Dried	Food poisoning	Cooked and eaten. No dosage
33	Mammalia	Wild Boar	Fat	Fresh	Hair care	Fats are fried to produce oil which is applied daily.
34	Mammalia	Silvered Leaf Monkey	Gall bladder	Dried	Diabetes & High Blood Pressure	At least 3 pieces are eaten, one per day at intervals of a few days to lower diabetes. The same applies for high blood pressure.

C) TAI-AHOM COMMUNITY OF UPPER BRAHMAPURA VALLEY-

The upper Brahmaputra valley region includes Tinsukia, Dibrugarh, Sivsagar, Jorehat districts of Assam. Tai Ahom people uses 8 different

species of non chordates and 13 different species of chordates for therapeutic purpose. The following table shows the usage of animals among Tai-Ahom community-(After Dipsikha Dutta Bhuyan, 2015)

SL.NO	Zoological name	Family	English name	Parts used	Disease treated	Mode of use
1	<i>Pheretima posthuma</i>	Megascolecidae	Earthworm	Whole animal	Constipation & piles	The animal is boiled and the extract is taken
2	<i>Hirudinaria granulosa</i>	Hirudinae	Leech	Whole animal	Blood clotting	The extract is applied on the wound
3	<i>Pila globosa</i>	Pilidae	Apple snail	Body flesh	Asthma & Tuberculosis, stomach disorder	Cooked or roasted meat is taken
4	<i>Apis spp.</i>	Apidae	Honeybee	Whole animal	Cough, Snakebite, Skin Disease	Honey is taken and applied.
5	<i>Cancer spp.</i>	Canceridae	Crab	Whole animal	Jaundice, Stomach problem	Powder of the roasted animal is mixed with honey and applied locally
6	<i>Periplaneta americana</i>	Blattidae	Cockroach	Whole animal	Asthma & Tuberculosis	Grinded animal is boiled
7	<i>Philosomia ricini</i>	Saturnidae	Silk worm	pupa/ larvae Whole animal	Anemia, Stomach disorder	Roasted insect with water is consumed
8	<i>Antharea assama</i>	Saturnidae Muga	silk worm	Whole animal	Weakness, Anemia	Boiled and fried animal is consumed
9	<i>Anabus spp</i> Anabantidae	Anabantidae	Climbing perch	Whole body	post-operative care, anemia, weakness	The animal is cooked or boiled and consumed
10	<i>Clarius batracus</i>	Claridae	Magur	Whole body	pox, asthma, anemia, weakness	The animal is cooked and consumed
11	<i>Labeo rohita</i>	Cyprinidae	Rohu	whole body	weakness, stomach disorder	The animal is cooked and Consumed
12	<i>Puntius spp</i>	Cyprinidae	<i>Puthi</i>	whole body	weakness, stomach disorder	The animal is cooked and Consumed
13	<i>Naja spp</i>	Elapidae	Cobra	flesh, bile, fat	snake bite, rheumatic pain, body ache	Cooked meat is consumed, bile and fat is applied
14	<i>Corvus splendens</i>	Corvidae	Crow	fat, feather, meat	Dysentery, typhoid. Malaria	cooked meat is Consumed, fat and feather ash applied locally
15	<i>Anas platyrhynchas</i>	Anatidae	Duck	flesh and fat	nasal congestion, weakness	cooked meat is Consumed
16	<i>Gallus gallus</i>	Gallidae	Red jungle fowl	flesh and fat	nasal congestion, weakness	cooked meat is Consumed
17	<i>Hystrix brachyura</i>	Hystriidae	Porcupine	flesh and fat	weakness, body ache	cooked meat is consumed, fat is applied locally
18	<i>Sus scrofa</i>	Suidae	Pig	flesh and fat	weakness, typhoid	cooked meat is consumed, fat is applied locally
19	<i>Capra aegargrus hircus</i>	Bovidae	Goat	Meat, milk, urine	pox, asthma, anemia, weakness	Cooked meat is consumed, urine is applied locally
20	<i>Cynopterus</i>	Vespertilionidae	fruit bat	flesh	Dysentery, typhoid. Malaria	cooked meat is consumed
21	<i>Herpestes javanicus</i>	Herpestidae	Mongoose	Meat, fat, and bone	Dysentery, typhoid. Rheumatic pain, Malaria	Cooked meat is taken, fat is used for massage locally. powdered bone is applied locally

DISCUSSION

From the tables above it is evident that those above mentioned tribes in Assam use different animals in therapeutic purpose based on their

traditional knowledge. In most of the cases it is found that they use one particular animal in healing different ailments. As for example Bat is used for treating Dysentery, typhoid, Malaria in case of Tai-Ahom

community, whereas, it is used for treating Eneuresis, Diabetes among Biate tribe of Dima-Hasao district and among Mising tribe people, they are used for treating Asthma. Goat urine is used among both Tai-Ahom tribe and Mising tribe for the same purpose- for treating asthma and weakness. As literatures opines, goat milk contains less allergenic proteins and it is rich in calcium and easy to digest, hence reason behind goat milk use among tribes is supported by science (Josh Axe, 2015). Likewise, king cobra gall-bladder is used both in Tai-Ahom and Biate tribe of Assam for treating snake bite. Use of Cockroach for treating Asthma is also found in other native tribes of India and china. Pangolin scales are widely used in ethno-medicine among different tribes and communities for treating skin related problems etc but no biologically active substance have been extracted yet to support such usage. Such usage of animals is not supported by science always. In some cases, usage of protected species is seen among tribes which are against the rules of conservation biology although it is immense valuable in terms of traditional knowledge and ethno-medicine. Further research works are needed to determine the actual science behind such ethno-therapeutic usage of animals by investigating biologically active substances present.

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