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ETHNOZOOLOGICAL STUDY OF ANIMAL-BASED PRODUCTS PRACTICES AMONG TRIBAL INHABITANTS IN KOLLIHILLS, NAMAKKAL DISTRICT, TAMIL NADU, INDIA

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ABSTRACT

India has an abundance of fauna, and flora with various ethnic communities who are mainly reliant on the conventional medicinal system for their primary health care. Documentation and evaluation of this indigenous remedial information could be supportive to launch new drugs for human health. Hence, the present study proposed to determine the diverse zootherapeutic medicinal uses in the conventional health care system among the tribe inhabitants of Kollihills, Namakkal district, Tamilnadu, India. This study was primarily based on the field survey carried out with the tribes and information collected from around 200 tribes about animals based products used as medicine to prepare the remedies as well as ailments. The field survey was carried out from June 2017 to December 2017 by personal interviews through semi-structured questionnaires. In some cases, where participants were conducted informal interviews and open group discussions. The study related to animal species documented a sum of 45 different species, 45 genera, and 32 families, which are found to be the treatment of 55 different ailments. Mammals occupied the highest uses (36%), followed by Arthropods (24%), birds (16%), reptiles (11%), fishes (7%), annelids (4%), and amphibians (2%). Additionally, zootherapeutic animals and their body parts are known for the treatment of various ailments especially meat or fat (24%), visceral organ (22%), whole body (6%) and blood (5%). These findings recommend that the conventional zootherapeutic remedial measures practiced by the tribes of Kollihills, Namakkal district, plays a vital role in their primary healthiness. The data of this aboriginal information on

animal products could be very supportive in the formulation of strategies for ecological management and protection of bio-resources as well as providing the potential for the novel drugs discovery.

KEYWORDS: Ethnozoology, Tribes, Conventional Information, Animal-Based Products, Kollihills.

INTRODUCTION

A wide range of connection between animal and human mankind is generally stated as "Ethnozoology' as a division of science that deals with the study of the direct connection of animals to mankind.[1] The human relationship with animals may normally for a range of commitments like food, medicine, clothes, and other support requirements. All human ethos, which normally proposed a designed medical system consume animals as medications.[2] The consumption of animals is part of a body based on the conventional information, which is progressively becoming more appropriate to consider on protection to mankind, public health strategies, a natural perspective with patents and ecological management of natural resources.[3,4] Research attention and activities in the areas of ethnobotany, ethnomedicine has been enlarged greatly in the last decade. Since the inception of the disciplines, systematic research in these niche areas has made imperative contributions to understanding conventional subsistence and medical information and exercise.[5-7]

The treatment for human illnesses using medications from animals is well-known as zootherapy.[8] It plays a noteworthy function in curative practices, magic rituals, and religious cultures throughout the world.[9-12] In the recent era, zootherapy establishes a major substitute among many recognized healing practices in the world. The animal by-products aid as vital constituents for the groundwork of healing, defensive, and precautionary medicines.[13-15] The conventional medications have been significantly linking with recent allopathy medicine. Around 250 important chemicals that have been nominated by the WHO, in which 9% originated from animals.[16]

Since ancient times in India, boundless work has been completed in this zootherapy field and acknowledged to maintain in the Ayurveda and Siddha. Additionally, enormous info has derived to modern times through folklore as numerous practices became a part of a tradition among numerous ethnic groups. Therefore, there is a crucial necessity to inventories and document all ethnic zoological data among the diverse ethnic communities before the

conventional principles totally vanish.[17,18] The investigations on the healing nature of animals and their body parts have been deserted, while compared with plants however the urgent aid is required in the niche area.[19]

The southern part of India is normally a great biodiversity area harbors greater flora and fauna population that consume by many tribe groups as conventional medicine.[2,20] This is now endangered for the ecological management of species used in ethnomedicine due to numerous forces such as unlawful trade. The ethnozoological knowledge of the diverse ethnic communities in this region choices from edible, medicine and healing use.[21-23] Tamil Nadu is the greatest biodiversity hotspot state possess Western and Eastern Ghats that inhabit various ethnic tribal communities. Namakkal is a middle heart of Tamil Nadu possess a rich diversity of ethnic communities including tribes that has gifted with a benefit for evolving countless information on ethnozoology. They have developed their own preparation through their conventional information. Due to the contemplation of high bioresource zone of the studied area, a lot of works have been completed on the ethnobotany and well documented.[5,11,24] but there is no info related to zootherapy. Thus, keeping the aspects in view, an urgent necessity to inventories and record all ethnozoological information among the diverse ethnic communities to the upkeep of this vital cultural practice for policies of conservation and management of faunistic resources. In this connection, we aimed to study and document the conventional knowledge of animal use among the tribes that are fast diminishing forest cover, agricultural practices and to narrow the existing gap of our data in this field.

MATERIALS AND METHODS

Study area: Kolli Hills is a small hilly region situated at Namakkal district, which is in the central Tamil Nadu of India. The hill is elevated to 1300m and occupy the area of around 280 km² extended between latitude 11.248514 and the longitude of 78.338707. They are the main portion of the Eastern Ghats, which is a hilltop range that runs typically equivalent to the east coast of South India.

Selection of study area: The ethnozoological study was carried out from June 2017 to December 2017 in specific study sites in the Kollihills, Namakkal district. The information reported was based on data collection from tribes of either sex through regular visits to virtually every nook and got an information from the panchayat board, market, hotels and coffee shops.

Sampling and data collection

The ethnozoological data (mode of preparation and administration, and part of the animal used) were collected through questionnaires, interviews, and focus group discussion with selected tribal residents at Kollihills. Positively, about 200 key informants were randomly selected, and questionnaires, interviews, and focus group discussion were made within these tribes. These informants were possibly local herbalists, traditional healers, farming experts, midwives, and spiritual intellectuals who were many years' experience and recognition as knowledgeable members concerning traditional zootherapeutics.

Group discussion

Brief group dialogs were done at each place prior to the supply of comprehensive questionnaires on the significance of animals in conventional medicine and correlated issues with the selected informants of the study site. During the deliberations, an effort was made to inspire the healers and used their assistance. The informed consent was acquired before the data collection.

Semi-structured interviews and Informant consensus

A semi-structured checklist and interview questions were arranged in advance. The interviews were based on this checklist, and some issues were elevated promptly depending on the responses of an informant. The interview was totally held in Tamil, the language of the local people. The place and time for the discussion were set based on the notice of the informants.

Animal specimen collection and identification

The local names and associated attributes of medicinal animals were documented for each of the species. Identification of the medicinal animals was prepared using Internet and animal key by comparison with collected plates and illustrations.

RESULTS AND DISCUSSION

The present study demonstrated the conventional medicinal information of treating various types of ailments using diverse animals and their products by inhabitants of tribes in Kollihills, Namakkal district. Socio-demographic characteristics of the informants such as sex, age, educational level, and marital status were collected and presented (**Table 1**). During the survey, informants comprised a random distribution of the male-female ratio, where 68.5% of informants were male and only 31.5% were female. The high male-female ratio

may specify the dominance of the informants of male medicinal practitioners over female. Majority of the informants (83%) were found to have schooling education, and still, they have more knowledge about the practice of local animals for conventional medicines. The results of informants and gender ratio were very similar to that of previous observation.[25] The age of the informants varied from 35 to 77 years. The percentage of the local medicinal practitioner with age lower than 45 was found to be very low with only 37.5% as compared to 57.5% of the age group of society above 45 years (**Table 1**). This results showed that the age groups of the society were more familiar about conventional medicinal uses than that of youngsters. This tendency was very similar to that of previous observation in Assam.[26] The reason for less familiarity with conventional therapeutic practices among the youngsters could be due to urbanization and integration of strange culture.

The investigation noted a sum of 32 families, 45 genera, and 45 species of animals that were found to treat 55 different ailments. This investigation summarizes the animal group, English name, scientific name, the parts of the species used, to treat the diseases and mode of application **(Table 2)**. These 45 animal species categorized into vertebrates (72%) and invertebrates (28%). These animal species belong to 45 taxonomic groups among which mammals occupied the highest uses (36%), followed by arthropods (24%), birds (16%), reptiles (11%), fishes (7%), annelids (4%), and amphibians (2%) **(Figure 1).** In contrary**,** Insects were occupied dominantly in the previous study that was reported from Arunachal Pradesh, India, which might be easily available in the study area.[27] In the present study, the highest zootherapeutic animals to be recorded are mammals as some of them are domesticated animals. Conversely, in previous reports, mammals and reptiles are among the main group of animals used in folk medicine.[28-30] However, mammals, are used in conventional medicine as dominant animals' species that were reported from other parts of India.[25,26,31]

According to the information given in the **Figure 2**, meat/fat (24%) was the most extensively found medicinal parts in the animals, followed by visceral organs (22%), products of honey, butter, milk and venom (13%), and bone and teeth (12%), external body parts (12%), whole body and excreta of the animals (6%) and blood (5%). This results showed that animals and their body parts establish part of the record of medicinal ingredients.[16] In addition, arthropods and largely terrestrial invertebrates also used as conventional medicines.[32] Tribal communities use these animals for the treatment of around 55 kinds of different ailments

including asthma, paralysis, cough, fever, wound healing etc. According to the study, folk medicine was mainly acquired through parental heritage. It was recognized that the older peoples are regularly preferred to use this folk medicine in comparison to another age group. In India, it has been reported that 109 animal species use in conventional medicine by diverse ethnic communities. Among these mammals played a great role constitute approximately 40%.[10] The tribes have whispered on some superstition and myths associated with traditions, which cause harm to wildlife animal. Despite medicinal purpose, local inhabitant also uses animal resources for another purpose in their daily life, for example, to decorate their traditional houses. This type of decoration is also reported in another part of India.[33]

Tribal people stay close to nature and depend upon forest for their daily needs such as food, fuel, medicine etc. The tribal peoples collected all the resources from forest through capturing, hunting, killing etc. The utility of animals for therapeutic purposes are immense in tribal groups and their folk medicine system is always multidimensional. The diseases are also related to biological and socio-cultural dimensions of the society. Traditional healers use their five senses to diagnose the diseases, which are remarkable because they live in interior areas and lack modern scientific treatment; however, they treat diseases using medicinal plants and animals.[34,35] Documentation of such animals from the perspective of ethnozoological angle is important for the understanding of indigenous knowledge for conservation aspect for future need. The values of animal-based medicine are very important in tribal culture. They are the easily available resources for the majority of the tribal populations with limited access to other medical care system. Thus there is a need to shift the focus from how to ensure future uses. Hence, the conventional knowledge should be included in the strategies of conservation of animals to save them from extinction. Further studies are required not only to confirm the presence of bioactive compounds in these conventional remedies but also to emphasize the more sustainable use of these resources.

Table. 1: Socio-Demographic Characteristics of the Respondents.

Basic information	Number of respondents	Percentage (%)
Sex		
Male	137	68.5
Female	63	31.5
Age		
35–44 years	75	37.5
45–60 years	115	57.5
> 60 years	10	5
Educational level		
Illiterate	34	17
Literate	166	83
Marital status		
Married	144	72
Single	52	26
Divorced	4	2

Table. 2: Medicinal uses of animals and animal parts for traditional therapeutic purposes by the tribes of Kollihills, Namakkal district, Tamil Nadu.

Animal group	Common name	Scientific name	Part/product used	Disease treated	Mode of application
Mammals	Wild boar	Sus scrofa	Meat	Rheumatism, syphilis, stomachache, and malaria	Eating
	Cow	Bos taurus	Butter	Malaria and paralysis	Eating
			Milk	Rabies and TB	Drinking
			Urine	Malaria	Drinking
			Spleen	Anemia, malaria, and trachoma	Eating
			Omasum	Gastritis	Eating
			Liver	Anemia	Eating
			Blood	Wart	Drinking
	Porcupine	Hystrix spp.	Meat	Swelling, TV, headache, AIDS, asthma, rheumatism, gastritis, and hypertension	Eating
			Bile	Asthma/diabetes, stomach scramble	Drinking
			Stomach/ intestine	Diarrhea and diabetes	Eating
			Thorn/spine	Wound and a broken leg	Tying
			Liver	Diabetes disease	Eating
	Human	Homo sapiens	Stool	Wart	Anointing
	Donkey	Equus africanus asinus L.	Milk	Measles, cough, trachoma/rabies, and internal problem	Drinking
	Buffalo	Bos bubalus	Meat	Sex stimulant	Eating
	Rat	Rattus spp.	Meat	Intestinal disease	Eating
			Foot	Nightmare	Tying

			Blood	Wart	Anointing
	Goat	Capra aegagrus hircus L.	Milk	Eye disease, gastritis, wound, headache, measles, TB, eye disorder, vomiting, snake poison, and rheumatism	Drinking
			Fat	Wound and Toothache	Banding
			Liver	Trachoma	Massaging
			Butter	A headache and ear infection	Massaging
	Pig	Sus scrofa	Meat	Rheumatism and headache	Eating
			Blood	Skin infection	Anointing
	Sheep	Ovis aries	Milk	Malaria	Drinking
	Cat	Felis domesticus	Skin	Spiritual problem	Tying
	Common fox	Canis spp.	Brain tissue and meat	Epilepsy, mental disorder	Eating/drinking
			Bile	A toothache, eye problem, and internal problem	Drinking
	Dog	Canis familaries	Bone	Epilepsy	Tying
	Bat	Cynopterus sphinx	Meat	Hepatitis, mental disorder	Eating
	Red jungle fowl	Gallus gallus L.	Testis	Male impotence	Eating
	Leopard cat	Felis bengalensis	Flesh	General weakness	Eating
Birds	Pigeon	Columba livia	Meat	Mental disorder, body fracture, and heart failure	Eating
	Crow-phesant	Centropus sinensis	Flesh	Bodyache, earache and rheumatic pain	Eating
	Duck	Duck spp.	Meat	TB	Eating
	Hen	Gallus gallus domesticus	Whole body	For physical injury and wound	Drinking
			Liver and fat	Swelling wound, pneumonia	Eating
	Bald eagle	Haliaeetus leucocephalus	Blood	Skin fungus	Anointing
	House sparrow	Passer domesticus	Fecal	Constipation	Banding
	Peacock	Pavorist sps.	Meat	Aphrodisiac and earache	eating
Reptiles	Snake	Naja naja	Coat	Headache	Tying
			Venom	Malaria and snake bite	Anointing
			Head	Diarrhea, evil eye, and headache	Tying
	Python	Python spp.	Bone	Rabies and swelling	Tying and Banding
			Tail and bone	Cancer and swelling	Banding
			Fat	Wound and ear disease	Banding
			Meat	Rabies, foot crack, and ear disorder	Eating, anointing
	Tortoise	Testudo graeca	Teeth	Swelling	Heating
			Shell	Trypanosomiasis, nose bleeding	Fumigation
	Chameleon	Chamaeleo chamaeleon	Whole body	Cancer, body fattening	Tying

	Lizard	Lacertilia spp.	Whole body	Dry cough and anemia	Drinking
Fish	Fish	Any fish spp.	Meat	Rheumatism	Eating
			Bile	Eye disorder	Eating
	Eel Fish-Cuchia	Monopterus cuchia	Blood	Hair loss, anemia, asthma	Eating
	Lata	Channa punctatus	Head	Sex stimulant	Eating
Arthropods	Scorpion	Palamnaeus swammerdami	Meat	Scorpion bite	Massaging
	Bee	Apis mellifera	Honey	Wart, asthma, diarrhea, throat pain, stomach ache, cough, TB, mumps, heart failure	Eating, drinking
			Larvae	Stomach disorder	Drinking
	Termite (Queen)	All spp.	Whole body	Fattening of livestock	Eating
	Field cricket	Gryllus campestris	Whole body	Eye disease, pneumonia	Eating
	Gnat (small insect)	All spp.	Honey	Stomachache, eye disorder, and coughing	Eating
	Bumble bee	Bombus spp.	Honey	Coughing, malaria, and stomachache	Eating
	Ticks	All tick spp.	Blood	Fungal disease on the skin	Anointing
	Prawn	Palaemon sp	Whole body	General weakness	Eating
			Pila water	conjunctivitis	Eating
			Flesh	Rickets	Eating
	Crab	Cracinus Sp.	Whole body	Asthma	Eating, drinking
	Apple Snail	Pila globosa	Flesh	Asthma, tuberculosis, stomach disorders and eye-related problems	Eating, drinking
	Cockroach	Blatta orientalis	Whole body	asthma and Tuberculosis.	Eating
Annelid	Leeches	All spp.	Head	Rheumatism	Massaging
	Earthworm	Metaphire posthuma	Head	Rheumatic arthritis	Massaging
Amphibian	Frog	Rana tigrina	Flesh	Wound	Massaging

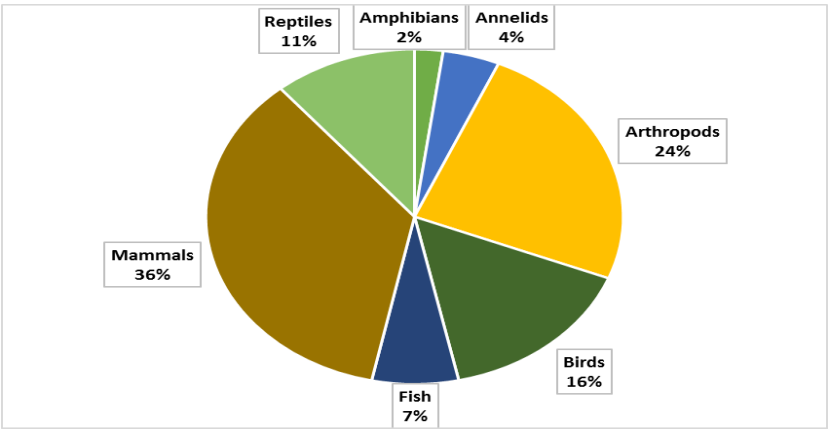

Figure. 1: The percentage of animal categories being used in zootherapeutic practices among the tribes of Kollihills, Namakkal district, Tamil Nadu.

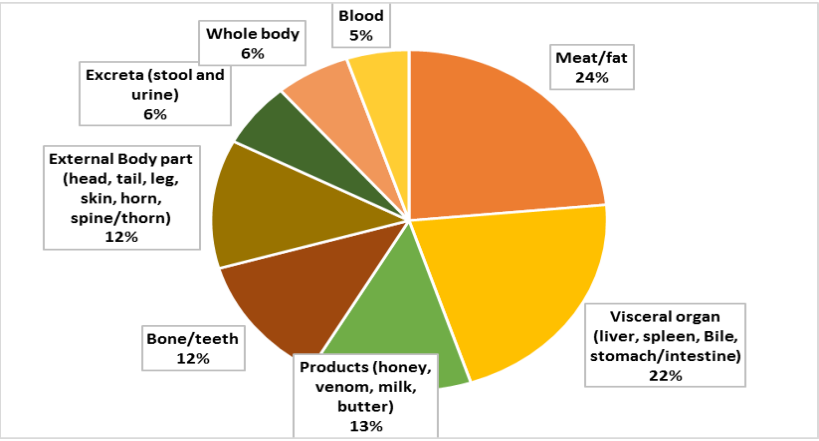

Figure. 2: Animal parts or products used among the tribes of Kollihills, Namakkal district, Tamil Nadu.

CONCLUSION

Ethnozoology provided the data of the animals used by the tribes to cure different ailments. It promises the practical use of animals for medical purposes. The data gained through this study is pilot and hence further studies on integrating scientific validation to the conventional wisdom for their pharmacological validation should include key factors like taxonomy, ecology, strategies of conservation and management of faunistic resources in the investigated area is required to complete understanding of the dynamics of this conventional information. On the basis of these present findings, it is concluded that there is an ample scope for exploration of the bioefficacy of ethnozoological diversity in the entire region of Kollihills and Namakkal district.

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