

RESEARCH ARTICLE

TRADITIONAL KNOWLEDGE OF THERAPEUTIC USES OF ANIMAL RESOURCE AMONG INDIGENOUS TRIBAL COMMUNITIES IN WAYANAD DISTRICT, KERALA STATE, INDIA.

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Abstract

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*Key words:*ethnozoology, ethnobiology, traditional knowledge, indigenous communities, biodiversity conservation. Ethnozoology is a hybrid discipline that integrates both the natural and social science that examines the historical, sociological, anthropological, economical and environmental aspects of the relationships between humans and animals. The present study was intended to seek animal based resources with medicinal uses in the traditional healing system among the indigenous tribal communities in Wayanad District, Kerala State, India. Field survey was carried out from November 2016 to March 2017 by personal interviews through semi-structured questionnaires with tribal elders, healers and tribal families. The study recorded a total of 29 different species which are used for the treatment of 51 different ailments. Chordata occupied the highest uses (76%), followed by Arthropoda (10.3%), Mollusca (6.8%) and Annelida (6.8%). Among Chordata, Mammals occupied a highest number of animals (44.8%), followed by Aves (10.3%), Reptiles (10.3%), Fish (6.8%), and Amphibians (3.4%). The findings showed that the traditional knowledge of animal derived medicines followed by tribal communities in Wayanad play an important role in their primary health care. The documentation of this indigenous traditional knowledge on ethnobiology will be helpful in the formulation of strategies for sustainable management and conservation of bioresources as well as providing potential for the novel drug discovery.

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Introduction:-

India has vast faunal, floral, more over cultural diversity with many indigenous communities who are basically dependent on the traditional knowledge and traditional medicine for their health care. Ethnobiology describes how people of a particular culture and region make use of indigenous plants and animals (Padmanabhan, 2007). The science of ethnozoology is a sub-field of anthropology concerned with how human beings perceive, manage, classify and use animal species (Solavan *et al.*, 2004). It also focuses on the ways in which animals influence the people they interact with and how man utilized animals for food, clothing, work, worship and companionship (Solavan *et al.*, 2004). Zootherapy is a component of ethnozoology where the medicinal use of animals and animal derived products are studied. The healing of human ailments by using therapeutics based on medicines obtained from animals or ultimately derived from them is known as zootherapy (Holennavar, 2015). According to the zootherapeutic universality hypothesis, all human civilizations with a structured medical system will utilize animals as medicines (Marques, 1994). Animal based medicines have always played a significant role in the healing practices, magic rituals and religions of indigenous and western societies all over the world (Rosner, 1992). Of the 252 essential

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chemicals selected by the World Health Organization (WHO), 11% come from plants and 9% from animals (Marques, 1997). About 15 to 20% of the Ayurvedic medicine in India is based on animal derived substances such as cheese, milk, meat, eggs, chicken, sea shell and animal parts. (Unnikrishnan, 1998; Yirga *et al.*, 2011).

Chemicals from nature have been a part of human civilization ever since our early ancestors began exploiting natural compounds to improve and enrich their own lives (Agosta, 1996). Animal based medicines have been elaborated from the parts of the animal body, from products of its metabolism (corporal secretions and excrements) or from non-animal materials (nests and cocoons) (Costa-Neto, 2005). The investigation of traditional medicine has proven a valuable tool in the developing art of bio-prospecting for pharmaceutical compounds (Costa-Neto, 2005). The traditional knowledge about medicines among indigenous communities all over the world has played an important role in discovering biological resources worthy of commercial utilization and also to conserve them.

According to Majumdar, "a tribe is a collection of families or common group bearing a common name, the members of which occupy the same territory, speak the same language and observe certain taboos, regarding marriage, professions and have developed a well assured system of reciprocity and mutuality of obligations" (Mehta, 2006). The tribe is a social group with definite territory, common name, common district, common culture, behavior of an endogamous group, common taboos, and existence of distinctive social and political system, full faith in leaders and self-sufficiency in their distinct economy (Vidyarthi, 1981; Jayakumar and Palaniyammal, 2016). Tribals are mostly the forest dwellers who have gathered prolific knowledge of forest resources over centuries. India possesses a total of 427 tribal communities (Kala, 2005). Tribal peoples have managed, protected, nurtured and shaped their land for generations. They, more than anyone, have the best knowledge about the agriculture, resource management and biodiversity in their land. The tribals who depend on plants and animals for their day-to-day life and health problems are the real custodians of the knowledge of medicinally important plants and animals (Solavan *et al.*, 2004). Most of the knowledge gathered by the tribals over several generations about medicinal plants and animals are not yet revealed to the outside world.

The loss of traditional knowledge represents the irreversible loss of information about different ways to manage natural resources. Most of the biodiversity associated with tribals have either disappeared or are on the verge of extinction (Vedavathy, 2002). Therefore, our immediate concern is to document the indigenous knowledge related to therapeutic use of animal species and to devise strategies to preserve and tap this rich knowledge in a more sustainable way for the benefit of mankind (Solavan *et al.*, 2004).

Ethnozoological exploration and documentation among the ethnic groups are the need of present era, where chances of cultural mixing up and adoption of modern technologies in all fields of life are happening. Due to the rapid globalization, it is evident that the erosion rate of knowledge base among the tribal people is also high and chances for getting the knowledge documented for the welfare of entire humanity is of at most importance (Padmanabhan, 2007). Hence there is an urgent need to study about their zootherapeutic methods before it erodes due to the impact of modernization.

Study Area

Study areas are located in Wayand district, Kerala State (Fig. 1). According to census of India 2001, Wayanad has the highest number of tribals (1, 36,062). Wayanad is a place with large number of ethnic society who lives in the vicinity of forests and have enormous knowledge of ethnozoological therapeutic methods. The State of Kerala is situated between 8° 18' and 12° 48' N latitude and 74° 52' and 77° 22' E longitude. It is located in the southernmost corner of India bordered by Arabian Sea in the west, Indian Ocean in south, Tamil Nadu in the east and Karnataka in the north. The state is 38,864 km2 in extent spread over 14 districts and is just 1.8 per cent in size of the entire Indian subcontinent. Ethnozoological studies were carried out in three Panchayats namely Mullankolli, Panamaram and Ambalavayal in Wayanad District in Kerala State shown in Fig. 1.



Figure 1:- Wayanad district panchayats

Methodology:-

A field study was carried out in the study area from November 2016 to March 2017. While visiting their colonies, information about tribals living style, traditional dressing style and their culture were collected by direct observation. Both statistical and question based survey was conducted in 5 houses belonging to each tribal community. The information was collected using a structured questionnaire. Questionnaire was consisted of questions related to their family details, animals utilized by them, purpose of use of those animals, their local name etc. A qualitative semistructured interview was conducted during field work. To take interview judgmental selection was used to identify tribal members who are aware about the animal medicine, identification, preparation and usage. Door to door visit was carried out to identify the key respondent and asked about the ailments for which the animal derived remedies were used and the manner in which the medicines were prepared and administered. Before each interview, permission was taken from the tribals to record the conversations and to take photographs. The length of each interview lasted for approximately two hours. The age of the tribals interviewed ranged between 20 and 85 years. The tribals had a belief that the efficacy of the medicine will be lost if it is revealed to outsiders. Some tribal elders hesitated to reveal the procedure of medicine preparation. Data collected from Non Governmental Organisations working for tribal developments were also used as a support. Most of the species are very common and were identified using standard zoological references available. Rare and threatened species are also identified and recommendations for the sustainable 312utilization of animal resources are suggested.

Ethnos

As per the Scheduled Castes and Scheduled Tribes Orders (Amendment) Act, 2002(Act 10 of 2003) vide Part-VII Kerala-Second Schedule notified in the Gazette of India, dated 8th January, 2003, the Government of Kerala has enlisted 36 Adivasi communities in the state as Scheduled Tribes. There are 9 tribal communities in Wayanad District namely Paniyars, Kurichiar, Mullukkurumar, Kattunayikkans or Thenkurumars, Wayanad Kadars, Adiyar, Kunduvadiyar, Kanalaadikal, Uraly and Thachanadans. Three tribal communities are selected for the study namely 'Paniyas', 'Kurichiar', and 'Uraly'. The etymological meaning of the term 'Paniyars' indicates that they earn their livelihood from labour as the term 'Pani' in Malayalam means 'labour' (P. Somashekaran Nair, Paniyarude, Gothrangal). Thus the word 'Paniya' literally means 'labourer' or 'worker'. Paniyas are the largest scheduled tribes of Kerala. The majority of the Paniya tribal population (71.95%) is found in Wayanad District alone. They are mainly settled in Wayanad. Some of them are settled in Malappuram, Kozhikode and Palakkad districts. The word 'Uraly' means the ruler of a village. Uraly enjoy the right of cultivating the forest land. They are nomadic agriculturists. They are mainly found in Sulthan Bathery and Mananthavady blocks in Wayanad, with concentrations in Tirunelly, Panamaram, Poothadi, Noolpuzha, Mullankolli, Kaniyampetta, Ambalavayal and Nenmeni. Kurichiya (Kurichiyar) also called as Hill Brahmins (Malai Brahmins) are a group of matrilineal tribe of Kerala. Since this class of people was skilled in archery Kottayam Raja named them as 'Kurichian' which is derived from combination of two words kuri (target) and chiyan (people). They are experts in hunting. They are the first agricultural tribe to have settled in the Wayanad district. They are mainly distributed in Wayanad and Kannur districts of Kerala, India.

Ethnozoological Analysis

The study recorded a total of 29 species of animals which were used to treat 51 different human ailments. Table 1 summarizes the classification, disease or purpose of use, part(s) used, preparation of medicine and mode of application. These 29 species of animals belonged to both vertebrates (22 species) and invertebrates (7 species). Chordata occupied the highest uses (76%), followed by arthropoda (10.3%), mollusca (6.8%) and 313tilize (6.8%) (Fig.2). among Chordata, mammals occupied a highest number of animals (44.8%), followed by aves (10.3%), reptiles (10.3%), pisces (6.8%) and amphibians (3.4%) (Fig.3). Highest zootherapeutic animals to be used are mammals as most of them are domesticated animals.



Figure 2:- Percentage of animal categories being used in zootherapeutic practices by the traditional healers among tribal communities in Wayanad district.



Figure 3:- Percentage of animal categories among Chordata being used in zootherapeutic practices by the traditional healers among tribal communities in Wayanad district.

Some of the traditional medicine were administrated orally and some through dermal application. Majority of the remedy preparation had different additive substances such as plant leaves, root etc. Different parts and products of animals were used for remedy preparations including teeth, intestine, milk, blood, gland, urine, hair and excreta. The medicinal animals have various methods of preparation for different types of ailments like crushing, powdering, squeezing, direct use and cooking. Asthma, piles, allergy, cough were some of the important diseases in the study area (Table 1).

SI No	Classification	Common	Dicease	Dont(a)	Modicino	Mada of
SL.NU.	Classification		Disease treated/Purnose	rart(s) used	nrengration	application
1.	Kingdom: Animalia Phylum: Chordata Class: Reptiles Order: Testudines Family: Testudinidae Genus: Intestudo	Tortoise	Burn/scald, crack heels, swollen throat	Plastron	Plastron is powdered and made into a fine paste by adding oil.	Applied over skin
2.	Kingdom: Animalia Phylum: Chordata Class: Reptilia Order: Squamata Genus: Python Species: <i>bivittatus</i>	Python	Arthritis	Body fat	Fat is converted to oil	Oil is applied over the skin
3.	Kingdom: Animalia Phylum: Chordata Class: Mammalia Order: Carnivora Family: Viverridae Genus: Paradoxurus	Civet	Asthma Unhealthy body	Flesh/Skin Civet musk	Flesh/skin is cooked Civet musk is fried and pepper powder is added.	Oral administration Oral administration
4.	Kingdom: Animalia Phylum: Chordata Class: Reptilia Order: Squamata Family: Varanidae Genus: Varanus	Varanus	Tissue damageForbodyflexibilityForenergeticbody	Flesh fat Fresh tongue	FleshiscookedBody fatBody fatisextractedfromitsbodyFreshtongue is cutofffromisbody	Oral administration Applied all over the body Oral administration
5.	Kingdom: Animalia Phylum: Annelida Class: Clitellata Order: Hirudinida Family: Hirudinidae Genus: Hirudo Species: <i>medicinalis</i>	Leech	Abscess	alive leech	leech is collected and kept alive	Live leech is made to bite on abscess and suck blood
6.	Kingdom: Animalia Phylum: Annelida Class: Oligochaeta Order: Haplotaxida Family: Megascolecidae Genus: Pheretima	Earthworm	Asthma	body	Fresh earthworm are collected directly from soil and made into juice	Oral administration
			Piles	Earthworm	Earthworm is fried and powdered along with rice	Oral administration
			Saggy stomach of kids	Earthworm	Bunch of earthworm bound in cloth and	Oral administration

Table 1:- Therapeutic uses of animal resource by the indigenous tribal communities in wayanad District. Kera

					then boiled	
					in water.	
					This water	
					is taken and	
					used to boil	
					used to boli	
					rice. This	
					rice is used	
	· · · · ·	2	<u> </u>		as medicine.	
7.	Kingdom: Animalia	Boar	Crack heel, For	Fat	Body fat is	Massaged over
	Phylum: Chordata		healthy delivery,		extracted	affected area
	Class: Mammalia		For joining		from its	
	Order: Artiodactyla		broken bones		body	
	Family: Suidae					
	Genus: Sus					
8.	Kingdom: Animalia	Duck	Piles,	Egg	Egg is fried	Oral
	Phylum: Chordata		Haemorrhoids		in neem oil	administration
	Class: Aves					
	Order: Anseriformes					
	Family: Anatidae					
	Genus: Anas					
	Species: platyrhynchos					
9.	Kingdom: Animalia		Asthma	Fresh fluid	Fluid from	Oral
	Phylum: Arthropoda			from joints	joints are	administration
	Class: Malacostraca				collected	
	Order: Decapoda				and mixed	
	Family: Portunidae				with	
	Genus: Scylla				medicinal	
	Species: <i>serrata</i>				plants	
	*	Crab	Unhealthy bones	Flesh	Crabs are	Oral
			and hair		collected	administration
					and made	
					into curry or	
					chutney	
			For proper	Flesh	Crab flesh	Oral
			lactation		curry is	administration
			in the training in the second s		made with	www.inition
					drum stick	
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					Perneromia	
					nellucida	
10	Kingdom: Animalia	Porcupine	Asthma	Intestine	Intestine is	Oral
10.	Phylum: Chordata	1 or cupine	1 Iounna	inconte	fried along	consumption
	Class: Mammalia				with ite	consumption
	Order: Rodentia				contents	
	Family: Frithizontidae			Spines	Spines are	Oral
	Genus: Hystriv			spines	spines are	odministration
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	species. maica				anu	
			Contraction	Dod-f.	Fot ·	Orral
			Contraception/	Body fat	rat 1s	Oral
			to reduce		extracted	administration
			Tertility		Irom its	
					body	0.1
			For abortion	Stomach	Stomach is	Oral
					smashed	administration.
					and made	Eat one spoon

					into posto	daily
			Characia accesh	Ell-	Desention in	Qually
			Chronic cough	riesh	Decoction is	ofai
					prepared with its	administration
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					nesn,	
					cumin,	
					garne, dried	
					ginger,	
					pepper and	
					bird's eye	
	¥7' 1 4 ' 1'	.	G 11	01 11	chilli.	A 1' 1
11.	Kingdom: Animalia	Unio	Scald	Shell	Shell 1s	Applied over
	Phylum: Mollusca				made into	affected area
	Class: Bivalvia				paste	
	Order: Unionoida		Spider poison	Shell	Shell is	Applied over
	Family: Unionidae				made into	affected area
	Genus: Unio				fine paste	
					with	
					turmeric	
					powder	
12.	Kingdom: Animalia	Elephant	Mumps	Teeth	Teeth is	Applied over
	Phylum: Chordata				made into	affected area
	Class: Mammalia				paste	
	Order: Protoscidea		Allergy	Excreta	Excreta is	Applied over
	Family: Elephantidae				mixed with	affected area
	Genus: Elephas				gingelly oil	
	Species: maximus indicus					
13.	Kingdom: Animalia	Hare	Asthma	Excreta	Unknown	Oral
	Phylum: Chordata					administration
	Class: Mammalia					
	Order: Lagomorpha					
	Family: Leporidae					
	Genus: Lepus					
	Species: nigricollis					
14.	Kingdom: Animalia	Snail	Cough	Body	Boil it in	Oral
	Phylum: Mollusca			-	water	administration
	Class: Gastropoda					
	Family: Helicidae					
	Genus: Helix					
15.	Kingdom: Animalia	Gaur	Hair loss	Dung	Dung is	Applied on
	Phylum: Chordata				dried and	hair scalp
	Class: Mammalia				powdered	L
	Order: Artiodactyla				and then	
	Family: Bovidae				heated with	
	Order: Bovinae				coconut oil	
	Genus: Bos					
	Species: gaurus					
16	Kingdom: Animalia	Dog	To make the	Excreta	Fresh	Oral
10.	Phylum: Chordata	- 0	person vomit		excreta is	administration
	Class: Mammalia		who have eaten		taken from a	
	Order: Carnivora		poison		black	
	Family: Canidae		Poison		coloured	
	Genus: Canis				dog	
	Species: <i>Junus</i>				405	
17	Kingdom: Animalia	eel	Asthma	Skin	Skin is dried	Oral
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	Class: Amphibia Order: Anura Family: Dicroglossidae Genus: Hoplobatrachus Species: <i>tiaarinus</i>				with pepper and salt	
26.	Kingdom: Animalia Phylum: Chordata	Goat	Arthritis	Bones	Bone soup is made	Oral administration
	Class: Mammalia Order: Artiodactyla		Asthma	Excreta	Fresh excreta	Oral administration
	Family: Bovidae Genus: Capra Species: <i>aegagrus</i>		Eczema	Excreta	Excreta is burned and its ashes are mixed with turmeric powder and oil	Applied over affected area
			Tinea versicolor	Excreta of wild goat	Excreta is mixed with cow urine	Applied over affected area
			Asthma, Malnutrition	Milk	Milk is boiled	Oral administration
			Diarrhoea	Milk	Nut grass stem paste mixed with goat milk	Oral administration
		To eject blood and mucus from stomach	Milk	Indian hog plum skin is made into juice and mixed with milk and then boil it	Oral administration	
27.	Kingdom: Animalia Phylum: Chordata Class: Aves Order: Galliformes	Hen	Burned skin	Body fat	Fatisextractedfromitsbody	Applied over burned skin
Fami Genu Spec	Family: Phasianidae Genus: Gallus Species: gallus		Pimples	Egg shell	Powder the egg shell and add turmeric powder and medicinal leaf paste is mixed with it	Apply over pimples
			Body building	Flesh	Adathoda root, chicken flesh, ghee are cooked together	: Oral administration
			Holoplexia	Flesh (Black hen)	Oil is extracted from its body	Oil is massaged over body

			Bruise	Egg white	Wild	Applied over
					mussenda,	bruise and tied
					touch me	by a cloth
					not plant	
					and masoor	
					dal are	
					mixed	
					together and	
					a paste is	
					made	
			Dislocation of	Egg white	Gin berry	Massage over
			bones		leaves	affected area
					mixed with	
					egg white	
					and aloe	
					vera powder	
28.	Kingdom: Animalia	Honey bee	Loss of appetite,	Honey	Honey	Oral
	Phylum: Arthropoda		Cough		mixed with	administration
	Class: Insecta				pepper and	
	Order: Hymenoptera				adhatoda	
	Family: Apidae				leaves	
	Genus: Apis		Vaginal	Honey	Mix honey	
			discharge		with 50ml	
					of coconut	
					flower	
					extract	
			Asthma	Honey	adhatoda	Oral
					leaves	administration
					extract is	
					mixed with	
					one spoon	
			<u> </u>	**	of honey	0.1
			Stomach pain	Honey	Leucas	Oral
					aspera	administration
					leaves	in empty
					extract	stomach
					mixed with	
					cura and	
			Skin hurn	Honoy	Blooding	Apply over
			SKIII UUIII	Tioney	from uterus	affected area
			Bleeding from	Honey	30ml	Oral
			utorus	TIOLICY	Coconut	administration
			uterus		flower	administration
					extract	
					mixed with	
					20ml honey	
			Cough	Honev	20ml honey	Oral
			cougn	110110	mixed with	administration
					20ml ginger	
					extract	
29.	Kingdom: Animalia	Cow	Jaundice	Milk	Milk mixed	Oral
	Phylum: Chordata				with	administration
	Class: Mammalia				stonebreaker	
	Order: Artiodactyla				leaves	

Family: Bo Genus: Bos Species: ta	vidae s urus	Crack Heel	Body fat	Body fat is directly used	Apply over cracked heel
		Cancer	Urine	Cow urine mixed with neem leaf extract	Oral administration
		Asthma	Urine	Cow urine mixed with alcohol and pepper	Oral administration
		For memory power	Milk	Milk is mixed with 30ml Brahmi leaves extract	Oral administration
		Cholera	Milk	Milk mixed with stone breaker leaves extract or L. aspera extract	Oral administration in empty stomach
		Vaginal discharge	Milk	10gm <i>Molineria</i> <i>trichocarpa</i> root powder or 15gm blue pea root powder mixed with one glass of milk	Oral administration
		Pimples	Milk	Sweet cumin, black cumin seeds, sesame seeds and mustard seeds made into paste and added to milk	Apply over pimples
		Snake bite	Milk	Mix milk with lotus root paste	Oral administration
		Stomach pain	Milk	5-6 Guava tender leaves paste is mixed with milk	Oral administration
		Cat bite	Milk	Asafoetida is mixed	Oral administration

			with milk	or apply it over the bitten area
	For more blood and to purify	Milk	Hemidesmus indicus root extract or cutch tree boiled water mixed with milk	Oral administration
	Allergy	Milk	Milk is converted to curd	Apply over affected area
	Body building	Milk	Cyperus rotundus 5gm is mixed with milk	Oral administration
	Acid burps	Milk	curd and mixed with neem leaf paste	Oral administration
	Acid burps	Fat	Body fat is heated with garlic extract	Oral administration one spoon in morning
	Eczema	Milk	<i>Ixora</i> <i>coccinea</i> root and flower paste mixed with curd	Apply over affected area
	Pin worm infection in body	Milk	Dried drumstick power mixed with milk	Oral administration
	Ulcers in mouth and intestine	Milk	Wild Neem leaves paste or Bishoop's weed paste mixed with curd and rock salt	Oral administration
	Vomiting	Milk	Magnolia champaca root which is grown in North direction is cut and its extract is taken and it is mixed	Oral administration

			with 15ml	
			curd and a	
			red hot iron	
			rod is	
			dipped in it	
	Tinea versicolor	Urine	Cow urine is	Oral
			mixed with	administration
			papaya	
			leaves	
			extract	
	To eject blood	Milk	Lemon juice	Oral
	and mucus from		is added to	administration
	stomach		fresh cow	
			milk	
	To stop blood in	Milk	Buckler	Oral
	stools of kids		leaved	administration
			moon seed	
			is fried in	
			ghee,	
			powder it	
	Diarrhoea	Milk	Cashew	Oral
			tender	administration
			leaves paste	daily
			is mixed	
			with curd	
	Diabetes	Milk	50gm	Oral
			Arrow root	administration
			powder	
			mixed with	
			milk	

Discussion:-

Tribals live close to nature and they have acquired a unique and specific knowledge especially concerning the local flora, fauna and their use in medicine. Wayanad is the only District which has largest tribal population in Kerala State and there had not been any concerted effort to document traditional use of animals for food, medicine and other purposes. In this connection we believe that this is the first report of traditional knowledge of ethnozoological use of animals by paniyar, kurichiar and uraly tribal communities in Wayanad District.

In all, information of 29 species of medicinal animals was collected for treating 51 different human ailments. Majority of the animals had multipurpose use. From the study it is found that, whole animals, or their body parts, or products extracted from them, such as fat, honey, milk, butter, wax, urine, faeces, meat, skin, bones, tails, and eggs are used for various therapeutic purposes. Among these products, milk was the most used. Besides this, it is found that most of the animals used by all the three tribals for ethnozoological therapeutic purpose were belonging to class Mammalia of phylum Chordata. Since, most of the domesticated animals by tribals were belonging to Mammalia, this result indicates that the choice of zootherapeutics 322utilized depends upon the accessibility and availability of fauna locally. Similar results were found in ethnozoological study in Silent valley by Vijayakumar *et al.*

Vats and Thomas (2015) reported 42 various animal species as traditional medicine using for nearly 30 different medicinal purposes by Sukuma tribe of Busega district in North-western Tanzania. From the list of animals he has reported, about 6 animals used for ethnozoological purpose was found to be same as in the list of animals used for ethnozoological purpose by tribals in Wayanad District, Kerala.

Different researchers from India have reported altogether 448 ethnozoologically important animals. Out of these, ethnozoological study from the Silent Valley by Vijayakumar *et al.*, itself have contributed to the knowledge of 57 medicinal animals (Vijayakumar et al., 2015). The use of honey to cure cough has been also reported amongst the

Irular, Mudugar, Kurumbar tribal communities in Attapadi hills of Western Ghats (Padmanabhan, 2008) while the same insect sting is used against paralysis and senselessness by some tribal communities in South India (Dixit et al., 2010). Medicine made using earthworm has been found to be effective in chronic illness, measles and typhoid (Lohani, 2011) while tribals in Wayanad use it for asthma as well as piles. Powdered porcupine spine is used against asthma by tribals in Wayanad while it is used to treat fever by Chakhesang Tribe of Nagaland, India (Kakati and Doulo, 2002)

The usage of droppings of dog taken orally to induce vomiting during stomach poisoning among tribals in Attapadi hills of Western Ghats (Padmanabhan and Sujana, 2008) was also found among tribals in Wayanad. The use of Honey against cough is common to most of the different tribal communities in India. The inherent property of teeth of elephant to act against mumps has never been reported before. Likewise, the use of fresh tongue of varanus as energy booster was not reported earlier; only its use in cooked manner was found in other studies. Unio has a long Indian history of bearing medicinal property but its use against spider has never been reported before. Therefore, it can be said now that the discovery of different animal species used by the Paniyars, Kurichiars, Uraly in Wayanad district of Kerala paves way the need to undertake detailed ethnozoological study of the whole districts of Kerala involving as many tribal communities as possible. Regardless of the rich plethora of bio-resources and ability, growth is far from meeting the expectations of tribal communities mainly concerning the current health care facilities. There has been increasing attention paid to animals as sources for new medicines (Jain et al., 2007). They have been methodically tested by pharmaceutical companies as sources of drugs for modern medical science (Kunin and Lawton, 1996). From this project report, our results add some more knowledge to this field. This finding demonstrates the importance of local faunal diversity in furnishing folk medicine as suggested by Alves and Rosa who observed that faunal composition, accessibility and availability directly influence the type of zootherapeutic resources used in any given region (Borah and Prasad, 2017).

Conclusion:-

Chordata occupied the highest uses (76%), followed by Arthropoda (10.3 %), Mollusca (6.8%), Annelida (6.8%). Among Chordata, Mammals occupied a highest number of animals (44.8%), followed by Aves (10.3%), Reptiles (10.3%), Fish (6.8%), and Amphibians (3.4%). The findings show that the traditional knowledge of animal derived medicines followed by tribal communities in Wayanad play an important role in their primary health care. The information obtained from the present study concerning the ethnozoological use by the tribals in Wayanad need a thorough pharmacological exploration involving few lab trials and analysis. This could also help in generating awareness with regard to the necessity for conservation, preservation and enrichment of the gene bank of such economically important species before they are lost forever. The documentation of this indigenous traditional knowledge on animal derived medicines will be helpful in the formulation of strategies for sustainable management and conservation of bio-resources as well as providing potential for the novel drug discovery.

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