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A review on zoo-ethno-medico-biological studies and human welfare

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A B S T R A C T

Animals and the humans have intimate biological relationships since ancient times. The body parts of animals and their products have constituted a part of the inventory of folk medicinal communities and of them 227 ethnic tribal groups are living in India. They are using entire organism or their body parts and products such as flesh, bones, teeth, bone marrow, blood, fat, testicles, semen other secretion products such as a milk, butter, ghee, honey and even metabolic products like urine and excreta of not only the domesticated animals but also of the wild animals. Overall, 46 animals were identified as drug producing species and recorded by their zoological names. This article reviews of healing the diseases with animals and their by products.

Introduction

Population explosion in certain parts of the world, especially in the developing countries like India, has led to a continuous effort towards development of safer reversible and easy to deliver modes of contraception (Maiti et al., 2010). The science of ethno zoology is a sub-field of anthropology concerned with how human beings perceive, manage, classify and use animal species. The people they interact with and how man utilized animals for food, clothing, work and companionship. According to Zoo-therapeutic universality hypothesis (Marques, 1994) all human civilization with a structured ancient times animals and products derived from different organs of their bodies have constituted part of the inventory of medicinal substances used in

various cultures such uses still exist in ethnic folk-medicine.

Zoo-therapy is the healing of human diseases by use of therapeutics obtained or ultimately derived from animals (Costa-Neto, 1999). Prehistoric societies made intensive use of animals and their products. Primarily they were consumed as food, in addition, tools were made out of animal bones and teeth and clothes out of animal skin and fur. Animals were also used for religious purposes, such as sacrifices and they played an important part in magic rituals and mysticism (Holland, 1994). The healing aliments obtained from animals or ultimately derived from them which are

using therapeutics based on medicines are known as zoo therapy (Costa-Neto, 2005).

Ethno medicine

Ethno-medicine is concerned with the study of medical system from the native's point of view. Native categories and explanatory models of illness, including etiologies, symptoms. Courses of sickness and treatments are investigated (Kleinman, 1978; Kleinman, 1980). Important in ethno-medicine and generally in the medical anthropology literature is the distinction between the term "disease" and "illness". Disease has been defined as "a biomedical condition" while illness has been defined as a "Socio cultural category" (Fabrega, 1974).

Zoo-therapy is the healing of human diseases by use of therapeutics obtained or derived from animals. Prehistoric societies make intensive use of animals and their products. Seven main animal sources have been exploited for medical uses through out history, honey, wax, adder, beaver testicles, musk oil, coral and Ambergris. The world health organization estimates that as much as 80% of the world's populations rely primarily on animal and plant based medicines. In India, since time immemorial great work was done in the field of zoo-therapy, traditional medicine and documented in works like "Ayurveda" and "Charaka Samhita". A number of animals are mentioned in Ayurvedic system which includes 24 insects, 16 reptiles, 21 fisher, 41 birds and 41 mammals. Some other important ethno-medicine uses in South India in the table – 1 (Dixit et al., 2010).

Folk Medicine

Folk medicine in the mixture of traditional healing practices and beliefs that involve herbal medicine spirituality and manual therapies or exercises in order to diagnose,

treat or prevent an ailment or illness. Folk medicine is practiced by a majority the Mexican population while in Mexico, especially among the poor and uninsured (Gameren, 2010). There are many types of alternative of folk medicine practitioners among the Hispanic community.

The zoo-therapeutic species provide 46 raw materials, which are turned into medicines and prescribed for treating locally diagnosed ailments. There raw materials range from parts of the bodies, such as leg, hair, hide, fat, feather, penis, blood, bones, meat and heart to products of their metabolism, such as honey, milk, egg, feces (Table-2, 3 & 4). The extraction of there medicinal raw materials occur through manual gathering of small specimens.

The tribal people do not that some of wild animals' resources, they regularly use are endangered species. Animal population have become depleted or endangered as a result of their use as experimental subjects for animals' models also. Through modern day research and the studying of history, we know that cultures have always used plant or plant properties to treat or alleviate different illness.

Conclusion

The phenomenon of zoo-therapy is relevant because it implies additional pressure over critical wild populations. But the tribal communities are still dependent on indigenous knowledge for healthcare that is being influenced by culture and socio-economic aspects providing a cheaper and accessible alternative to the high cost pharmaceutical remedies. So, a judicious measure should be taken for the conservation of therapeutic animals. This can't be checked by suppressing the tribal people, but a modern method of conservation should be developed.

Table.1 Ethno-medicinal uses in South India

Zoological name	Common name	Parts used	Ailments
<i>Calotes versicolor</i>	Garden lizard	Fat	Rheumatism, acute pain
<i>Anas platyrhynchos</i>	Duck	Egg shell Flesh	Epistaxis, leprosy, paralysis.
<i>Apis mellifera</i>	Honey bee	Honey sting	Tonic, paralysis, senselessness
<i>Bombyx mori</i>	Silkworm	As of worm & cocoon	Aphrodisiac, rejuvenating tonic.
<i>Bos sp.</i>	Cow	Dung, urine, ghee	Skin infections, bone fever, memory loss
<i>Cancer pagurus</i>	Crab	Flesh	Tonic
<i>Cathrasis sp.</i>	Blister Beetle	Ash with lemon juice	Stomach ache caused by indigestion
<i>Cavia porcellus</i>	Big	Fat	Paralysis, joints pain, burn, healing wounds
<i>Centropus sinensis</i>	Crow pheasant	Flesh	Asthma, tonsillitis
<i>Chamaeleon zeylanica</i>	Chameleon	Oil/fat	Erectile dysfunction
<i>Climax sp.</i>	Bed bug	Chewed live	Acute asthma
<i>Coccinella septempunctata</i>	Ladybird beetle	Whole	Anemia, sexual tonic
<i>Columba livia</i>	Blue pigeon	Flesh & ash feathers	Paralysis, lymphatic ailments
<i>Corvus macrorhynchos</i>	Jungle crow	Tongue	Improve memory
<i>Corvus splendens</i>	Crow	Flesh, tongue	Asthma, brain power
<i>Desmodus rotundus</i>	Common Bat	Flesh, fat	Breathing and hearing problems
<i>Elephus maximus indicus</i>	Elephant	Dung, teeth paste with honey and borax on stone-applied over gums	Skin infections, easy teething in kids
<i>Funambulus pennati</i>	Squirrel	Flesh	Epilepsy
<i>Hirundo medicinalis</i>	Leech	Fried in sesame oil	Oil applied over male organ for stimulation
<i>Hyaena hyaena</i>	Hyena	Skull	Protects from all

			diseases
<i>Manis Crassicaudata</i>	Indian pangolin	Aqueous paste of scales	Swellings & inflammation
<i>Mungoes mungo</i>	Mongoese	Roasted penis, meat	Impotency, body pain, jaundice
<i>Musca domestica</i>	House fly	Swallowed live	Emetic
<i>Mutilla acidental</i>	Cochineal insect	Dried powder	Antispasmodic sedative
<i>Naja naja</i>	Cobra snake	Venom	Acute pain, sciatica, leucoderma, snakebite, elephantiasis
<i>Pavo cristatus</i>	Peacock	Flesh, bone past	Tonic, pus, wounds
<i>Periplaneta Americana</i>	Cockroach	Ash in crude liquor	Stone in urinary bladder
<i>Pheretima posthuma</i>	Earthworm	Dried powder	Aphrodisiac, piles, jaundice
<i>Plexippus paykulli</i>	Jumping spider	Whole	Paralysis, acute muscular pain
<i>Rana tigrina</i>	Frog	Cooked flesh	Tonic, improves vigour
<i>Sus scrofa</i>	Wild boar	Fat blood	Fracture, pain, burn, paralysis, chest pain
<i>Tegeneria gigantea</i>	Spider	Webs ash with honey	Aphrodisiac, muscular dystrophy like symptoms
<i>Testudo elegans</i>	Turtle	Ash of turtle	Bone tuberculosis, asthma, deep wounds, leucorrhoea
<i>Varanus banghalensis</i>	Monitor lizard	Live body fried in mustard oil	Muscular pain, erectile dysfunction, fungal infections
<i>Vespa orientalis</i>	Wasp	Ground with mustard oil, ground with honey & salt	Inflammation, pain, Leucoderma, skin infections

*Source: (Dixit et al., 2010)

Table.2 List of some folk medicinal animals in India

Common name	Use
Cockroach (Arsola)	The whole toasted insect is turned into and drunk three times a day to treat asthma.
Cricket (Jhinjhipoka)	Make a tea from powdered toasted hind egg and drink it as diuretic.
Toad (Bang)	The bones are used to prevent teeth caries.
Lizard (Girgiti)	Drink the water in which a live lizard has been cooked for curing withdrawn chickenpox.
Elephant (Hati)	Elephant tusk paste made with coconut oil and is used for 15 days to cure skin disease and Eczema.
Crocodile (Kumir)	Little amount of excreta mixed with coconut oil and apply locally to skin diseases.

Table.3 Ethno zoological inventory of Similipal Biosphere Reserve, Orissa, India

Zoological name, family and local name	Parts used	Disease	Mode of application
<i>Bos gaurus gaurus</i> (Mammalia) 'Gayala'	Bile	Asthma	Bile juice mixed with Arua rice powder and is given twice a day for 7 days.
<i>Buceros bicormis</i> (Bucerotidae) 'Kuchilakhai'	Oil	Rheumatism	Oil is heated and applied locally.
<i>Cervus unicolor kerr.</i> (Mammalia) 'Sambar'	Blood	Chronic dysentery	Dry blood is mixed with sugar and administered for 3 days.
<i>Crocodylus palustris</i> (Crocodilidae) 'Gumohan kumbhira'	Excreta	Skin diseases	Little quantity excreta mixed with cocoanut oil and applied locally.
<i>Elephas maximus L.</i> (Proboscidea) 'Hati'	Tusk	Skin diseases and Eczema	Elephant tusk paste made with cocoanut oil and is used for 15 days.
<i>Hystrix indica kerr.</i> (Rodentia) 'Jhinka'	Rectum	Colic	The rectum is boiled in water and is given twice a day for 7 days.
<i>Lissemys punctata punctata</i> (Chelonidae) 'Panka kaincha'	Fresh blood	Asthma	Fresh blood is mixed with few quantity of sugar and given to patient for drinking.
<i>Manis crassisaudata</i> (Manidae) 'Bajrakapta'	Feather	Piles	The ring is made up from the feather and

			tied on finger.
<i>Melursus ursinus</i> (Ursidae) 'Bhalu'	Hair, Fat	Fever, rheumatism	Hair burnt mixed with honey and is given to patient twice a day for 3 days.
<i>Panthera tigris</i> (Felidae) 'Mahabala bagha'	Liver gall bladder stone, milk	Courage, Abscesses, sooth ailments of the eye	The gall stone mixed with the ailments and is taken as a tonic. The liver is eaten to impart courage, milk is given to patient to cure eye.
<i>Pavo cristatus</i> L. (Phasianidae) 'Mayur'	Leg	Ear infection	Legs are burned and the powder is applied locally.
<i>Pterocarpus giganteus</i> (Chiroptera) 'Badudi'	Meat	Asthma and bronchitis	Prepared meat is given to the patient.
<i>Sus scorofacristatus</i> Wagner (Mammalia) 'Barha'	Teeth	Inflammatory pain	Teeth's are washed in water and is drunk twice a day for seven days.

* Source : Mishra et al., 2011

Table.4 Folk medicinal use of animals in the country of Tanquinho, State of Bahia, Brazil (** Source : Erado., & Maria (2000).)

Animal		Percentage of citation	Part used	Indication
English name	Species			
Insects	-	-	-	-
Cockroach	<i>Periplaneta americana</i>	92%	Whole	Asthma
Cricket	<i>Achaeta sp.</i>	36%	Hind legs	Diuretic
House fly	<i>Musca domestica</i>	36%	Whole	Baldness, immature furuncles
Leaf-cutting ant	<i>Atta sp.</i>	72%	Whole	Tendinitis
Stingless bee	<i>Teragonisca sp.</i>	72%	Honey	Cataract, glaucoma, cough
Stingless bee	<i>Melipona of scutellaris</i>	72%	Honey	Fortifier
Stingless bee	<i>Melipona sp.</i>	72%	Honey	Fortifier
Stingless bee	<i>Trigona spinipes</i>	72%	Honey Scutellum	Throat inflammation Acne,

				influenza stroke.
Arachnids	-	-	-	-
Bird-eating spider	<i>Theraphosidae sp</i>	7%	Hairs	Magic rituals
Scorpion	<i>Tytius sp.</i>	72%	Whole	To treat its own sting
Amphibians	-	-	-	-
Toad	<i>Bufo sp.</i>	72%	Bones, Hide, Venom, Whole.	To prevent oral diseases, Acne, Magic rituals, Urinary retention.
Reptiles	-	-	-	-
Lizard	<i>Tropidurus troquatus</i>	36%	Whole	Chicken pox
Neotropical rattlesnake	<i>Crotalus durissus</i>	72%	Fat Meat	Rheumatism
Toad-headed turtle	<i>Phrynops sp.</i>	36%	Fat	Rheumatism
Tortoise	<i>Chelone sp.</i>	72%	Blood Heart Whole	Erysipelas To stop the sensation of getting thirsty Erysipelas
Birds	-	-	-	-
Chicken	<i>Gallus domesticus</i>	72%	Fat White of the egg	Nasal congestion To stop bleeding, dysentery
Great rhea	<i>Rhea americana</i>	72%	Fat Feathers	Rheumatism Stroke
Ground-dove	<i>Leptotila sp.</i>	72%	Feathers	Stroke
Red-winged Tinamous	<i>Rhynchotus sp.</i>	36%	Feathers	Stroke
Southern lapwing	<i>Vanellus chilensis</i>	36%	Heart	To stay awake
Tinamous	<i>Crypturellus sp.</i>	36%	Feathers	Stroke
White-bellied nothura	<i>Nothura boraquira</i>	36%	Feathers	Stroke
Yellow-legged tinamou	<i>Crypturellus noctivagus zabele</i>	36%	Feathers	Stroke
Mammals	-	-	-	-
Brocket deer	<i>Mazama cf americana</i>	36%	Hide	Stroke

			Femur	To make a child walk sooner
Collared peccary	<i>Tayassu tajacu</i>	36%	Hide	Stroke
Dog	<i>Canis familiars</i>	72%	Feces	Chicken pox
Donkey	<i>Equus asinus</i>	36%	Milk	Whooping cough
Fox	<i>Dusicyon sp.</i>	36%	Fat	Rheumatism
Giant anteater	<i>Myrmecophaga tridactyla</i>	72%	Hide	Stroke
Ox	<i>Bos taurus</i>	36%	Feces Medulla Penis	To make mosquitoes go away Baldness Sextual Impotence
Porcupine	<i>Coendou of prehensilis</i>	72%	Hide	Stroke
Pig	<i>Sus scrofa domesticus</i>	36%	Fat	Furuncles, tumors
Sheep	<i>Ovis aries</i>	36%	Fat	Torsion
While-lipped peccary	<i>Tayassu pecari</i>	36%	Hide	Stroke

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