

The Ethnomedicinal Uses of Vertebrate Animals by Indigenous Communities in the Durg and Balod Districts Near Nikum Gram Panchayat, Chhattisgarh.

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ABSTRACT

Chhattisgarh, in central India, is home to various tribal communities skilled in using local biological resources for food and medicine. Research involving interviews and questionnaires was conducted with village leaders near Nikum gram panchayat in Durg and Balod Districts to gather data on animals used in traditional remedies. Of the 35 vertebrate species identified, mammals made up 40%, birds 20%, reptiles 20%, amphibians 8.57% and fish 11.43%. Zoo therapies were employed for common ailments in humans and livestock, with conditions treated including fever, malaria, and wounds. Domestic animals like cattle and goats were used less frequently than wild animals, including endangered species like bears and porcupines. Some animal-derived remedies are sold in local markets, competing with Western pharmaceuticals. A key challenge is conserving dwindling wild species used in traditional medicine while documenting and validating these indigenous practices.

Keyword- Central India, Tribal communities, Questionnaires, Traditional remedies, Pharmaceuticals

INTRODUCTION

Research increasingly shows the connection between biodiversity and human health, highlighting its importance beyond food security to include medicinal resources. Since ancient times, animal and plant parts have been used for healing, and these remedies remain vital in global healthcare (Chivian 1997). While animal-derived products are essential, plant-based substances are more commonly used in traditional medicine. The use of animals in medicine is part of a broader traditional knowledge system relevant to biological prospecting, conservation, and patenting (Rolston 2000 and Alves et al 2005). Over half of current pharmaceuticals come from biological sources, with 8.7% of essential compounds identified by the WHO derived from animals (Marques 1997). Animals also play a role in religious practices and healing rituals worldwide (Alves et al 2005 and Costa-Neto 2000 and Phillipson 1989).

Over 1,500 animal species are recognized for their medicinal properties in traditional Chinese medicine (Reid 1982). The Tamang community in Nepal uses by-products from 24 animal species for medicinal purposes, while Japan has documented 60 insect species for various ailments (Schimitschek 1968). In Pakistan, 31 animal-derived compounds make up 9% of the therapeutic substances used by traditional healers (Ali et al. 1984). A review in northeastern Brazil identified 250 animal species used medicinally (Alves 2005), and Alves et al. (2008) noted at least 165 reptile species in global folk medicine.

In India, research has focused on zoo therapies and traditional practices, as outlined in Ayurveda and Charaka Samhita. India's biodiversity, shaped by its geography and climate, supports a wealth of ethno-zoological knowledge. However, the literature on this knowledge is fragmented. Mahawar et al. (2008) reviewed and identified approximately 109 animal species used in India for treating various ailments. A study near Mount Abu identified 24 species with medical applications (Jaroli et al 2010), showcasing diverse zootherapeutic practices among Indian tribes, particularly in Rajasthan, Maharashtra, Kerala, Andhra Pradesh, and parts of Assam and Nagaland (Deb et al 2011). In the Arun Basin, local communities use amphibians for medicinal

purposes (Shah et al 1992), while Tamil Nadu tribes employ them in traditional therapies (Slovan et al 2004). Fish and aquatic organisms are also used in ethno medicine in Bangladesh (Deb et al 2011). Mishra et al. (2011) noted that local populations in Orissa utilize parts from seven vertebrate species for twelve health issues. However, research on ethnic groups in Arunachal Pradesh is limited, highlighting the need for more data.

Despite being dismissed as superstitions, traditional animal-based remedies have been used for centuries, warranting further investigation into their effectiveness. Some have been validated through testing by pharmaceutical companies and are now part of modern medicine (Launet 1993). For example, peptides from the amphibian *Phyllomedusa* are used to treat depression, stroke, epilepsy, and Alzheimer's-related cognitive decline (Amato 1992). Curare, derived from poison arrow frogs, was the first muscle relaxant used in psychiatric therapies (Fink 2001). Today, pantocrin, an extract from deer velvet, is marketed as a potent antioxidant with anti-stress and immuno modulator effects for humans and animals, including dogs (Kang et al. 2006; Moreau et al. 2004). The search for therapeutically valuable chemicals from animals is growing, but this raises concerns about overexploitation and extinction of beneficial species (Costa-Neto 2000).

Chhattisgarh, meaning '36-Forts,' is the 10th largest state in India, covering 135,194 km² and home to 28 million people, making it the 17th most populous state. It significantly contributes to India's electricity and steel production, accounting for 15% of the total steel output. Historically, it was ruled by the Marathas from 1741 to 1845 and then by the British until 1947. Raipur became the prominent capital after British rule began, and in 1905, the Sambalpur district was transferred to Odisha while Surguja estates moved from Bengal to Chhattisgarh. Chhattisgarh has over 13 million males and about 12.9 million females, making up 2.11% of India's population. The state features a favorable sex ratio of 991 females per 1,000 males and a child sex ratio of 964. Approximately 20% of its population (around 5.1 million in 2011) lives in urban areas, with a majority residing in rural regions. A government report shows that 34% are Scheduled Tribes, 12% Scheduled Castes, and over 50% belong to Other Backward Classes. Various castes inhabit the plains, while tribes like Gond and Halbi occupy forested areas. A notable Bengali community has contributed to education and industry since the British era. Traditional medicine in Chhattisgarh uses around 31 animal species for treating health issues (Oudhia 2003). This study aims to document how indigenous populations in Durg and Balod districts utilize animals and their products for common health problems, highlighting the importance of preserving ethno biological knowledge.

MATERIALS AND METHODS

Study Area

The study area selected for this study was Nikum Gram Panchayat located in Durg district of Chhattisgarh, India. Nikum is located in the central part of Durg district, 22 kilometers south of the district headquarters on NH-6. Tandula and Shivrath river are also connected to the study area. Total 28 villages around the Nikum gram panchayat were selected for the study. The coordinates of Study Area is 21° 05' N and 81° 24' E.

Data Collection

For our data collection, we divided the whole study area into four different study blocks based on river basin and topography which are included in following table-1.

Table-1- The study area and study blocks

S.N.	Character	Study area			
1	Blocks	A	B	C	D
2	Direction around Nikum and river basin	North	South	East	West

3	Total number of village	7	7	7	7
4	Name of village	Achhoti	Godella	Aamti	Arjunda
		Albaras	Devsara	Anda	Batoli
		Bharda	Devri	Chicha	Bhothali
		Changori	Bamhani	Khursuni	Jhola
		Chigari	Chirchar	Masabhat	Mahud
		Khada	Kumtalori	Mohandipat	Ruda
		Tirga	Khurshipar	Vinayakpur	Thanaud

The Participatory Rural Appraisal (PRA) technique was used to gather ethno-medical data on the usage of animals, mostly vertebrates (Alves et al 2018 and Rokaya et al 2010). Using this approach, we talked about the therapeutic qualities and local status of animals while using sets of questions about their use in ethnomedicinal. We conducted a group discussion using the photos of the animals that are found in that area. Farmers, social workers, medical professionals, and healers from the area participated in the PRA.

[c] Class of animals medicinally used in the study area

In the present study, A total of 35 species that belong to five classes (Mammals, Bird, Reptiles, Amphibia, and fish) were used for the management of 67 health conditions. Mammals were the most frequently 14 (40%) species used medicinal animals by traditional medicinal practitioners and indigenous people in the study area (Table 2).

Table-2- Class and species of medicinally used animals in the study area

S. N.	Class	Species	No. of Species	Percentage	Disease treated
1	Mammals	Bear (<i>Ursus arctos</i>)	14	40.0	Arthritis,
		Cat (<i>Felis catus</i>)			Asthma
		Camel (<i>Camelus bactrianus</i>)			Baldness especially in male
		Goat (<i>Capra hircus</i>)			Burn,
		Cow (<i>Bos taurus</i>)			Detoxification
		Buffalo (<i>Bubalus bubalis</i>)			Diarrhoea
		Squirrel (<i>Rodentia sciurus</i>)			Early pregnancy pain
		Human (<i>Homo sapience</i>)			Epilepsy
		Rabbit (<i>Oryctolagus cuniculus</i>)			Eye ache.
		Sheep (<i>Ovis aries</i>)			Gastric pain
		Donkey (<i>Equus asinus</i>)			Gastritis.
		Rat (<i>Rattus rattus</i>)			General weakness

		Mole (<i>Talpa europaea</i>) Porcupine (<i>Erethizon dorsatum</i>)			Hepatitis B and C Injuries Liver problems, Night blindness, Paralysis, Skin diseases Stomach disorders. Tuberculosis Whooping cough,
2	Birds	Crow (<i>Corvus corax</i>) Duck (<i>Anas platyrhynchos</i>) Hen (<i>Gallus domesticus</i>) Eagle (<i>Haliaeetus hastata</i>) Owl (<i>Bubo bengalensis</i>) Pigeon (<i>Columba livia</i>) Sparrow (<i>Passer domesticus</i>)	7	20.0	Abdominal pain Anemia, Arthritis , Asthma, Blisters and pimples Blood pressure Burns Cough, Diarrhea Early tooth eruption Fever, General weakness Hair fall, Healing of injuries Kidney problems Leucoderma Maleness(malevolency) Pain, Paralysis. Sexual desire, Stomach upsets,

					Stuttering Used to treat sprains Vitality Whooping cough, Wounds
3	Reptiles	Cobra (<i>Naja naja</i>) Viper (<i>Vipera russelli</i>) Rat snake (<i>Ptyas mucosus</i>) Python (<i>Python malurius</i>) Indian mabuya (<i>Eutropis carinata</i>) Monitor lizard (<i>Varanus sp.</i>) Turtle (<i>Testudo sp.</i>)	7	20.0	Abscess, Arthritis, Asthma, Body Pain Bone fracture Bronchitis, Conjunctivitis Cough & Fever Diabetes Galactoschesia Gastric Problem Goiter Impotency Inguinal hernia, Jaundice, Leprosy Malaria Male Sex Stimulant Menstrual irregularity Night blindness, Paralysis, Piles Promote eyesight Rickets, Sciatica,

					Skin disease, Snake bite, Tonsil, Tuberculosis Vitiligo,
4	Amphibia	Frog (<i>Rana tigrina</i>) Toad (<i>Bufo</i> sp.) Tree frog (<i>Hyla</i> sp.)	3	8.57	Acne (pimples) Asthma, Burn Eczema Hyperpyrexia (very high fever) Jaundice Paralysis Piles, Pneumonia Rheumatism Urinary retention, Whooping cough, Wound
5	Fish	Eel (<i>Monopterus albus</i>) Rohu (<i>Labeo rohita</i>) Clarias (<i>Clarias batrachus</i>) Snake head murrel (<i>Channa striata</i>)	4	11.43	Anemia Arthritis Asthma, Burn injuries Cough and cold Diarrohea. Fish sting pain General weakness, Kidney stones Liver problem Malaria.

					Rickets, Skin Fairness Small pox, Urine blockage problem Weakness after delivery.
Total			35		

RESULT AND DISCUSION

Our study found that indigenous communities in the Durg and Balod districts of Chhattisgarh primarily use mammals for ethnomedicinal purposes, which make up 40% of the 35 vertebrate species identified. Other species include birds (20%), reptiles (20%), amphibia (8.57%), and fish (11.43%). This diversity helps distribute demand across multiple species. Similar findings were noted by Meyer-Rochow (2010), highlighting differing tribal views on species usage. Various Indian ethnic groups, including the Nyishis and Galos, also share some medicinal species. Fish, such as *Amblyceps* sp. and *Bagarius bagarius*, are significant in traditional rituals and for treating ailments (Shrestha 2008). Residents of Nikum Gram Panchayat use species like eel, Rohu, Clarias, and snakehead murrel for health issues like anemia and asthma. Additionally, tribal communities in Kerala and Nagaland consume entire frogs (*Rana* spp.) for healing, and our findings suggest that frogs, toads, and tree frogs are similarly used in Nikum Gram Panchayat for treating ailments.

Tribes in Kerala use python fat for rheumatism (Padmanabham et al 2008), while those in Andhra Pradesh employ snakes for cattle foot and mouth disease (Benarjee et al 2010). In Arunachal Pradesh, monitor lizards are used for fever and cough, and tribes in Andhra Pradesh, Kerala, and Nagaland use lizard flesh for vitality and fat for rheumatism and joint pain (Benarjee et al 2008 and Padmanabham et al 2008). Residents of Nikum gram panchayat use various creatures, including cobras and pythons, to treat asthma and anemia.

In Andhra Pradesh, tribes use fried bird flesh for rheumatism, while Kerala tribes apply hornbill fat for physical discomfort (Padmanabham et al 2008). Although hornbills are considered medicinal in Kerala, their use is undocumented in India, despite Andhra Pradesh tribes believing they aid healing. Additionally, Andhra Pradesh tribes use crow flesh for digestive issues, while tribes in Nagaland and Kerala use it for rheumatism and paralysis, with Kerala also using it for leucoderma. Crow fat is used by Arunachal Pradesh tribes for smallpox and malaria (Benarjee et al 2008 and Padmanabham et al 2008).

Residents of Nikum gram panchayat use various animals, including crows, ducks, and eagles, to treat ailments like asthma and anemia. In Andhra Pradesh, Kerala, and Nagaland, tribes utilize porcupines and other ingredients for digestive issues, with specific animal parts employed for treatments: dried stomach in Andhra Pradesh, boiled flesh in Kerala, and gallbladder and bile in Nagaland, including bear bile for malaria (Benarjee et al 2008 and Padmanabham et al 2008). Musk deer meat is thought to boost immunity against malaria, while mithun gallbladder treats cough, diarrhea, and fever (Benares et al 2010 and Solanki et al 2004). Bull testes are used for skin conditions and lactation, fox meat is believed to cure tuberculosis, and wolf meat treats asthma, arthritis, and paralysis (Benares et al 2008 and Padmanabham et al 2008). Additionally, Nikum residents rely on bears, cats, camels, goats, cows, buffalo, and other animals for various health conditions.

Traditional animal species have long been used by tribes, making suppression unlikely to aid their preservation. A more effective conservation strategy should consider local social dynamics and cultural values, focusing on species vital to traditional medicine. Establishing a "Village Traditional Knowledge Bank" could help preserve knowledge and biodiversity. Furthermore, the effectiveness and properties of traditional medicines and animal products should be rigorously tested, with zoo treatment research prioritizing the welfare of therapeutic species and sustainable use of their byproducts.

CONCLUSION

In Chhattisgarh, socioeconomic factors significantly impact the popularity of zoo therapy amid social diversity and wealth disparities. However, the younger generation's shift towards modern medicine raises concerns about the effectiveness and hygiene of zootherapeutic products, which often lack proper sanitation. This underscores the need for rigorous testing and regulation of animal-derived pharmaceuticals. Research into the chemistry, pharmacology, and epidemiology of these treatments is crucial for assessing their therapeutic potential and integrating them into public health programs. Additionally, studying the population and availability of these animal species is essential to preserve them as resources and maintain regional biodiversity.

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