Zootherapeutical Uses of Animal Diversity in Coastal District of Orissa, India

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Abstract: The present study documents zootherapeutic practices in Kendrapara district, Orissa, India. It is primarily based on field surveys carried out in villages, where dwellers provided information on animal species used as medicine, body parts used to prepare the remedies, and the illnesses to which the remedies were prescribed. The animal parts, viz. blood, excreta, feather and horn were used in raw or cooked forms for the treatment of piles, asthma, skin diseases, dysentery and rheumatism. These zootherapeutical resources were used for the cure of 11 illnesses. This research will hopefully help in monitoring and management of ethnomedicinal animals and highlights their importance in maintaining ecosystem services which could be a valuable tool for better understanding the long-term effects of traditional knowledge in Kendrapara district of Orissa, India.

Key words: Ethnomedicine, ethnozoology, Orissa, traditional knowledge, zootherapy

INTRODUCTION

Humans depend on biodiversity and the capacity of ecosystems to provide a multitude of bioresources and services that underpin a healthy human and natural environment. Many plant and animal extracts are well established in clinical practice and are likely to remain so for some time until better, cheaper, less toxic or more efficacious alternatives become available. Plants and animals have been used as medicinal sources since ancient times (Alves and Rosa, 2005; Alves and Rosa, 2007; Anyinam, 1995; Chivian, 1997; Lev, 2003) and even today animal and plant-based pharmacopeias continue to play an essential role in world health care (Alves and Rosa, 2007; Chivian, 1997). More than half of the world's modern drugs are derived from biological resources, which support the traditional and modern pharmaceutical sectors (Singh, 2002; Sullivan and Shealy, 1997). All systems of traditional medicine have their roots in folk medicine and household remedies. Whereas some of those earliest remedies were subjected to certain refinements, revisions and improvements through practices by trained medicine men. The people were using various recipes traditionally from generation to generation. Some of them have been in recorded form and some of them are not. Today, there is an increasing desire to unravel the role of ethno biological studies in trapping the centuries old traditional folk knowledge as well as in searching new resources of food, drugs etc. (Jain, 1987, 1991). Indeed, medicinal plants and animals have been used in virtually all cultures as a source of medicine (Alves and Rosa, 2005; Alves and Rosa, 2006; Philipson and Anderson, 1989; Yineger et al., 2007). India is an outstanding country both because of its great wealth of genetic resources and complex cultural diversity. The adaptation of the various human groups to the rich biological resources has generated invaluable local knowledge systems that include extensive information on plant and animal uses in general and medicinally useful species in particular. Nevertheless, the use of animal species as remedies, although representing an important component of traditional medicine (sometimes in association with plant species), has been much less studied than medicinal plants in the country (Mahata, 2002; Negi and Payal, 2007; Prabhakar and Roy, 2009; Roy and Singh, 2007). In this context, some of the uses of wild animals by people of Kendrapara district of Orissa are not known outside their restricted communities. Kendrapara, one of the coastal district of Orissa, eastern India, harbors a rich diversity of ethnozoological species, which generate considerable benefits from social and economic perspectives. Until now, people are preparing medicines from their available species of animals which are used to treat common diseases. Although ethnomedicinal uses of plants in Kendrapara district has been studied by some workers (Panda, 2010; Pattanaik et al., 2008), but in spite of the availability of ethnomedicinal animals in and around different blocks of the said district, they have not been studied ethnozoologically. The neglect of traditional food and medicines may seriously deteriorate the health and well being of traditional peoples (Begossi, 1998; Pieroni et al., 2002). Furthermore, nature-based traditional food and medicine are generally viewed as interchangeable, diet
being highly regarded as the primary basis for sustaining and/or restoring health and well-being. Therefore, there is an urgent necessity to document traditional knowledge, focusing on the maintenance of this important cultural practice. The present study has been designed to report the ethnozoological uses of animals to treat common diseases on the basis of field surveys and taxonomic identification of animals. The objective of this study is to motivate the people to come forward for the utilization, cultivation and preservation of traditional animals. Documentation on zootherapeutical practices can assist in protecting traditional knowledge, and in ensuring that future users recognize the contributions made by traditional communities, the current custodians of traditional knowledge.

MATERIALS AND METHODS

Study area: Bhitarkanika National Park (20°17’ - 20°47’ N and 86°45’ - 87°17’ E) in Orissa is one of the major reserve forests and fall in a total area of 145 km² along the maritime boundaries of the district Kendrapara and Bhadrak. It is surrounded by six Gram Panchayats having 410 villages with a population of about two lakhs. The climate of the region is monsoonal with coastal characteristics. Three distinct seasons are felt during the year. Rainy season (mid June till October), winter (mid October to February) and summer (March to mid June). The air temperatures range from 37°C in summer to 13°C in winter with an average annual rainfall of about 130 cm. The region is subject to cyclones during the wet seasons and coastal areas are affected by the resulting strong winds and intense rainfall. Agriculture is well developed. The intimate association and dependence of the communities on the local natural resources have enriched them with invaluable knowledge on bio-resource utilization and consequently they have developed extensive knowledge on various animals.

In villages in and around Bhitarkanika National Park Zootherapy (treatment with medicines from animal and their derived products) form an integral part of the local culture, and information about animals and their uses are passed from generation to generation through oral folklore, primarily amongst the elderly; they are natural retainers of traditional knowledge in their respective communities. The field study was carried out from July 2008 to June 2010 in different villages around the National Park and information on the use of medicinal animals was obtained through structured questionnaires, complemented by free interviews and informal conversations (Huntington, 2000). The interviews were individually carried out and, during the first contacts with the local population, “native specialists” were identified, in other words, people who consider themselves, and are considered by the community as having exceptional knowledge about the use of animals. Forty three (34 men and 09 women) were interviewed. Among these interviewees, 10% were aged 21-40 years, 40% were 61 years old or more and half of the sample (50%) were in the 41-60 age range. Collections are valuable because they serve as voucher specimens, records of the animals that are known by community and function as specimens for systematic identification (Martin, 1995). A voucher specimen facilitates the identification of the species encountered during the research and permits colleagues to review the results of the study (Jain and Rao, 1977; Jain, 1987). Knowledgeable persons or medicine men, Kaviraj, experienced and aged persons, local healers of the villages were consulted for recording local name; parts of animal used, methods of drug preparation and recommended doses. Personal interviews and group discussions with local inhabitants revealed some very valuable and specific information about the animals, which were further authenticated by crosschecking. In addition to crosschecking and recording folk names of animals through collecting voucher specimens, it is important to crosscheck information with different people and compare the results from different methods (Cunningham, 2001). Interviews with people out of the village, pastures or forests were conducted on a systematic basis to know more details about species, their management and distribution. In the enumeration, all animals have been arranged alphabetically. The correct zoological name is followed by family/order name within parenthesis, local name in Oriya and their ethno zoological uses were represented. The novelty of claims has been confirmed from the earlier workers (Prater, 1981; Sharma, 2002; Singh, 1998).

RESULTS AND DISCUSSION

Traditional healers use their five senses to diagnose the diseases, which are remarkable because they live in interior areas and lack the use of modern scientific equipments for treatment; however, they treat diseases using medicinal plants and animals (Santhya et al., 2006). Documentation of such plants and animals from the perspective of ethno biological angle is important for the understanding of indigenous knowledge systems. These resources are genetically important for future research. The results reveal that eighteen animal species were used for medicine purposes in the surveyed area. The inventoried species comprise six taxonomic categories: mammals (5), reptiles (2), aves (4), Arthropod (2), Annelida (1), Amphibian (1), Pisces (2) and Molluscs (1). The medicinal animal parts, feathers, horns, bile, oil, blood and flesh were used in raw or cooked forms (Table 1). These species were used to treat 11 different
Table 1: Ethnozoological inventory in and around Bhitarakanika National Park

<table>
<thead>
<tr>
<th>Zoological name, family/order and local name</th>
<th>Parts used</th>
<th>Diseases</th>
<th>Mode of application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axis axis axis Simpson (Cervidae) 'Harina'</td>
<td>Horn</td>
<td>Dysentery</td>
<td>The horns were properly grinded and taken orally in small amount.</td>
</tr>
<tr>
<td>Buceros bicornis Linn (Bucerotidae)'Kuchilakhai'</td>
<td>Oil</td>
<td>Rheumatism</td>
<td>Oil is heated and applied locally.</td>
</tr>
<tr>
<td>Capra aegagrus hircus Passang (Bovidae)'Chheli'</td>
<td>Leg</td>
<td>Gout</td>
<td>Curry of goat leg was taken orally for three days.</td>
</tr>
<tr>
<td>Cervus unicolor Kerr. (Mammalia) 'Sambar'</td>
<td>Blood</td>
<td>Chronic dysentery</td>
<td>Dry blood is mixed with sugar and administered for 3 days.</td>
</tr>
<tr>
<td>Cimex lactularicas Linn (Cimicidae) 'Chhapoka'</td>
<td>Whole body</td>
<td>Piles</td>
<td>The whole body of the animal was inserted into the ripe banana and taken orally.</td>
</tr>
<tr>
<td>Cheloni mydas Linn (Cheloniiidae)'Kainchha'</td>
<td>Meat</td>
<td>Asthma</td>
<td>The meat was extracted from the animal and curry was prepared and taken orally.</td>
</tr>
<tr>
<td>Crocodyluspalustris Lesson (Crocodilidae) 'Kumbhira'</td>
<td>Excreta</td>
<td>Skin diseases</td>
<td>Little quantity of excreta mixed with coconut oil and applied locally.</td>
</tr>
<tr>
<td>Pheretima posthuma Kinberg (Haplotaxida) 'Jia'</td>
<td>Whole body</td>
<td>Rheumatism</td>
<td>The whole body of the animal (1-2) was grinded properly and taken orally in small amount.</td>
</tr>
<tr>
<td>Gallus domesticus Linn (Phasianidae) 'Kukuda'</td>
<td>Egg</td>
<td>Cardiovascular</td>
<td>Burnt egg was given orally for heart patients.</td>
</tr>
<tr>
<td>Herpestes fuscus Waterhouse (Herpestidae)'Neula'</td>
<td>Whole body</td>
<td>Dysentery</td>
<td>Fresh flesh curry was taken orally.</td>
</tr>
<tr>
<td>Manis crassicua Gray (Manidae) 'Bajrakapta'</td>
<td>Feather</td>
<td>Piles</td>
<td>The ring is made up from the feather and tied on finger.</td>
</tr>
<tr>
<td>Labeo rohita Ham (Cyprinidae) 'Rohi Machha'</td>
<td>Bile</td>
<td>Piles</td>
<td>Bile juice was taken orally in very small amount (0.1 to 0.3 mg).</td>
</tr>
<tr>
<td>Periplanata americana Linn (Blantidae)'Asarapa'</td>
<td>Excreta</td>
<td>Bronchitis</td>
<td>Fresh excreta of cockroach with sugar was taken for 3 days.</td>
</tr>
<tr>
<td>Pterocarpus giganteus Jacq (Chiroptera) 'Badudi'</td>
<td>Meat</td>
<td>Asthma and</td>
<td>Prepared meat is given to the patient.</td>
</tr>
<tr>
<td>Bufo merinus Linn (Ranidae) 'Luni Benga'</td>
<td>Blood</td>
<td>Fever</td>
<td>Frog blood was taken (2-5 times) and given in dips (5-7 dips) to the children aged 12 years.</td>
</tr>
</tbody>
</table>

Diseases. The most cited diseases were: piles, asthma, dysentery, skin and rheumatism. Although this is first hand knowledge about ethno-medicine in Kendrapara, thorough pharmacological investigations are recommended since the informants claim the uses with confidence and strong belief. Zootherapeutics are usually applied in simple ways, mostly through ingestion or direct application to the affected area and usually not in association with other animal derived ingredients. In some cases, however, an association with medicinal plants or other resources is observed, as for example, for the treatment of asthma using the "Gayala" (Bos gaurus gaurus) bile juice in association with sun-dried rice (Oryza sativa), or the elephant (elephas maximus) tusk with coconut oil (Cocos nucifera) for the cure of skin diseases (Mishra et al., 2011). It is known that the use of medicinal animals is frequent in several countries (Alves et al., 2007; Alves and Rosa, 2008; Alves et al., 2009) and that often there are overlaps in the medicinal use of plants and animals in traditional medicine for humans (Alves et al., 2007; Alves et al., 2009). Consequently it is assumed that there is a close association between phytotherapeutic and zootherapeutic practices in traditional medicine for human usage.

The catalogued animals in the present study are common in the surveyed area, this way it is evidenced that the fauna composition of Kendrapara district influences the choice of medicinal animals’ usage. A similar tendency was reported by Adeola (1992) who observed that the animals used for preventive and healing medicine were associated with the natural area in which the users live, as well as with their relative species abundance.

CONCLUSION

Our results demonstrated the persistence of folk medicine practices in Kendrapara area, that the local communities are still dependent on indigenous knowledge for health care that are being influenced by culture and socio-economic aspects, providing a cheaper and accessible alternative to the high cost pharmaceutical remedies. Other studies are also necessary to preserve the popular medicinal knowledge which is important to enhance our understanding of the relationship among
men, society and nature, and also to elaborate more effective strategies for conserving natural resources especially to the Kendrapara region, where the studies concerning this subject are scarce. It is suggested that the government should integrate this health care system into the existing one to ensure proper development and harnessing ethno- medicine in India. This research will hopefully help in improving monitoring and management of ethnomedicinal animals and highlights their importance in maintaining ecosystem services which could be a valuable tool for better understanding the long-term effects of traditional knowledge in Kendrapara district of Orissa, India.

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