Traditional zootherapeutic practices by the indigenous Khasi natives of Sohiong village, East Khasi hills district, Meghalaya, India

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Abstract:
Objective: The aim of this study was to document the zootherapeutic values of some of the animals, parts and products of animals traditionally used by the native Khasi inhabitants, of Sohiong village, in the State of Meghalaya which is in North-eastern part of India.
Methods: The information on the remedial uses of animals against different ailments were collected from the Khasi community of Sohiong village, who use a variety of zootherapeutic medicines for curing different ailments in their own indigenous ways. Information was collected through interviews, group discussion and personal interactions. Most of the information regarding the use of animals as medicines was provided by the elderly person of agegroup 60 years above.
Results: Total 13 animal groups were recorded, of which the most were mammals (46 %) followed by insects (23%), aves (15%), amphibians (8%) and gastropod (8%). These are used in the treatment of various ailments including anaemia, cancer suspected cases, diarrhea, cough, fever etc. These were taken either orally or applied in the body parts or by prayer as ritual beliefs.
Conclusion: Present report is probably the first of this kind to document some zootherapeutic application being followed by the Khasis in Sohiong village, East khasi Hills district of Meghalaya, India. Our results revealed the persistence of traditional zootherapeutic medicinal practices in Sohiong village for primary health care. This knowledge may help in planning strategies of conservation, management and sustainable use of animal resources in traditional medicine.

Keywords: Sohiong. Traditional medicine, Zootherapy.

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INTRODUCTION
From the earliest days of recorded history, faunal resources have played a vital role in human lives. Human beings are familiar with the use of animals and their parts for food, cloth, medicine etc. since pre-historic time and some of the products have created part of the inventory of medicinal substances used in numerous cultures (1).
Traditional medicine is the sum total of the knowledge, skills, and practices based on the theories, beliefs and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness. It remains the most available and affordable form of therapy in low income countries (2). Practices of traditional medicine vary greatly from country to country, and from region to region, as they are influenced by factors such as regional biodiversity, life style, culture, history, personal attitude and philosophy. Although plants and plant-derived materials constitute the principal source of ingredients for traditional medicine, the identification of animal resources for medical cures is also crucial in human health care. Zootherapy is attracting the interest among scientists and research institutions from various countries, as it is part of the human cultural diversity and represents an important alternative to urban modern medicine, or even the only alternative, along with the medicinal plants, for the most economically deprived communities (3, 4, 5).
Animal and their body parts have been used as a source of medicine in the traditional healthcare system since ancient times, and have played a significant role in the healing practices in different parts of the world. In Bahia, the northeast State of Brazil, over 180 medicinal animals have been recorded in traditional health care practices (6). More than 1500 animal species have been recorded to be in some medicinal use in Traditional Chinese Medicine (7). In Israel, around 20 animal species whose products were sold as traditional drugs have been documented (8). A total of 48 different animals were recorded to be used
for different ethno-medical purposes by the major ethnic group of Karbi Anglong district of Assam (9). About 26 ethnomedical animals were reported and documented to be used by the indigenous inhabitants surrounding the area of Pobitora wildlife sanctuary, Assam (10). Eventually, zootherapy has raised concerns about its impacts to biodiversity, as some of the most valued species are also endangered with extinction (11, 12, 13). One classic example is the use and wide commercialization of the body parts of species such as the bear, the tiger and the Asian rhinoceros in traditional Chinese medicine (12). In this context, ethnobiological studies on the zootherapy practices of traditional communities around the world are of the most relevance, as they help establishing a global information bank of the animal species most used in traditional medicine, highlighting their ecological and cultural value, and also the species that may undergo higher pressures (3).

The interrelationship aspects between human and their biotic resources have evolved into different disciplines under the branch of ethnobiology. All these disciplines are aimed at documenting the time tested knowledge of ethnobotany and ethnozoology rooted in the culture of different society (14). Ethnozoology deals with the study of relationship between the human societies and the animal resources around them (15). This has been documented in different part of the world by different authors. However, ethnozoological studies and zootherapeutic investigations are limited in North-eastern part of India particularly, Meghalaya. Although a number of studies, research and publications have documented the use of plants and plants products as medicine, no assessment and record has reported the traditional use of animals in Meghalaya. Therefore, the present study intended at documentation of zootherapeutic uses by the indigenous Khasi inhabitants in Sohiong village, East Khasi hills Meghalaya, India.

**METHODOLOGY**

**Description of study area:**
Nongbah Sohiong is a village in the Mawphlang sub district/tehsil/taluk, East Khasi Hills district, in the State of Meghalaya. The village is approximately 30 km from the capital city Shillong (Fig. 1). As per Census 2011, the Nongbah Sohiong village has population of 294 of which 142 are males while 152 are females. According to the native inhabitants, Sohiong village is believed to derive its name from an indigenous fruit commonly called Blackberries and locally known as “Soh iong”, Soh= fruit and “iong”= black, because of its abundance in the region.

![Map of study area](image.png)

Figure 1: Map of study area i.e. Sohiong village, East khasi Hills district, Meghalaya.
Climate:
The climate of Sohiong village varies from the foothills to high altitude. It is hot and dry at the bottom, while pleasing and moderate at the top for the greater part of the year, with four distinct seasons- Spring (March to June), followed by summer (July-August), autumn (September-October) and chilly winter (November-February), with an average annual rainfall of approximately 600 mm.

Literacy rate of Nongbah Sohiong village is 86.52% (Census, 2011). As per constitution of India and Panchayati Raj Act, Nongbah Sohiong village is administrated by Sarpanch (Head of Village). A fraction of the population was found to have completed secondary and higher level of education while most of them have education merely up to primary level. Agriculture, animal husbandry and self-sustain business are the main livelihood of the local people. Nearly 80% of the population belongs to schedule tribe category and are Christians, and about 20% are ethnicity believing in the Khasi traditional beliefs and customs.

Data Collection:
Information on ethnozoology was gathered from the village chiefs (Rangbah shnong/village headman), medicine man, and local men and women. Analysis of data was made with the help of group discussions among different age groups of Sohiong villagers that include both the genders of the society. The selection of informants was based on their experience and recognition as "knowledgeable members" concerning traditional zootherapeutics. The preparation of remedies like the ingredients and meditation (if any) and how the medicines are administered were also collected during the discussions. Furthermore, information on how the respondents acquired their knowledge of folk medicine was collected.

RESULTS
The respondents were local traditional healers, farmers and midwives and were divided in four age groups 35-45, 46-55, 56-65 and 66-75 years. According to the informants, their traditional ethnozoological knowledge about medicinal value of animal to heal their kin or themselves was mainly acquired through parental heritage and experience. The people in the age group of 66-75 years provided maximum information on the traditional zootherapeutic uses against different ailments (Fig. 2). The use of different animals or their parts in different diseases by these people have been listed in (Table 1, Fig. 3) Total 13 animal groups were recorded of which the most used animals were mammals (46 %) followed by insects (23%), aves (15%), amphibians (8%) and gastropods (8%) (Fig. 4).

![Image](image-url)

Figure 2: Different age groups of respondents involved during field survey and their contribution towards information sharing.
<table>
<thead>
<tr>
<th>Serial no.</th>
<th>Animal groups</th>
<th>English name</th>
<th>Scientific name</th>
<th>Local name*</th>
<th>Parts used</th>
<th>Medicinal use</th>
<th>Prescriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Insects</td>
<td>Dragon fly</td>
<td><em>Anisoptera sp.</em></td>
<td>Niang helicopter</td>
<td>Whole body</td>
<td>Bed wetting</td>
<td>Removed wings and taken raw regularly</td>
</tr>
<tr>
<td>2</td>
<td>Insects</td>
<td>Honeybees</td>
<td><em>Apis cerana indica</em></td>
<td>U ngap</td>
<td>Honey</td>
<td>Cough fever</td>
<td>Mixed with lemon, black pepper and taken orally.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>fracture</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Applied externally</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Insects</td>
<td>Cockroach</td>
<td><em>Periplanata americana</em></td>
<td>Niangkalaw</td>
<td>Whole part</td>
<td>Asthma</td>
<td>Removed wings and taken raw orally</td>
</tr>
<tr>
<td>4</td>
<td>Aves</td>
<td>Crow</td>
<td><em>Corrus splendens</em></td>
<td>Tyngab</td>
<td>Blood</td>
<td>Cancer suspected, Asthma</td>
<td>Drink blood regularly</td>
</tr>
<tr>
<td>5</td>
<td>Aves</td>
<td>Chicken</td>
<td><em>Gallus domesticus</em></td>
<td>Syiar</td>
<td>Blood Fats</td>
<td>Anemia</td>
<td>Blood is taken raw regularly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Heart disease</td>
<td>Chicken meat is boiled and soup is consume.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Burns and wounds</td>
<td>Applied externally</td>
</tr>
<tr>
<td>6</td>
<td>Amphibians</td>
<td>Frog</td>
<td><em>Rana sp.</em></td>
<td>japieh</td>
<td>Whole body</td>
<td>Post partum pain/ ache</td>
<td>Intestine is removed, meat is smoked on fire, boiled and consumed</td>
</tr>
<tr>
<td>7</td>
<td>Mammals</td>
<td>Cow</td>
<td><em>Bos indicus</em></td>
<td>Masi</td>
<td>Skin</td>
<td>Dirrholva</td>
<td>Skin is ground, mixed with water and taken orally</td>
</tr>
<tr>
<td>8</td>
<td>Mammals</td>
<td>Pig</td>
<td><em>Sus scrofa domesticus</em></td>
<td>Sniang</td>
<td>Fats</td>
<td>Baldness, Muscle pain</td>
<td>Applied raw on the scalp, used as massage cream</td>
</tr>
<tr>
<td>9</td>
<td>Mammals</td>
<td>Goat</td>
<td><em>Capra aegagurus hircus</em></td>
<td>Blang</td>
<td>Legs Urine</td>
<td>Anaemia</td>
<td>Meat is boiled and consumed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tuberculosis</td>
<td>Urine is applied orally</td>
</tr>
<tr>
<td>No.</td>
<td>Animal Group</td>
<td>Animal</td>
<td>Common Name</td>
<td>Part</td>
<td>Condition</td>
<td>Method</td>
<td></td>
</tr>
<tr>
<td>-----</td>
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<td>--------</td>
<td>-------------</td>
<td>------</td>
<td>-----------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Mammals</td>
<td>Elephant</td>
<td>Elephas maximus</td>
<td>Hati</td>
<td>Tusk</td>
<td>Toothache</td>
<td>Grind mixed with water to form a paste and applied.</td>
</tr>
<tr>
<td>11</td>
<td>Mammals</td>
<td>Dog</td>
<td>Canis lupus</td>
<td>Ksew</td>
<td>Hair</td>
<td>Dog bite</td>
<td>Hair is mixed with rice powdered and applied on the affected area</td>
</tr>
<tr>
<td>12</td>
<td>Mammals</td>
<td>Tiger</td>
<td>Panthera tigris</td>
<td>Khla</td>
<td>Breast</td>
<td>Toothache</td>
<td>Breast part is chopped, mixed with water and applied</td>
</tr>
<tr>
<td>13</td>
<td>Gastropod</td>
<td>Snail</td>
<td>Pila globosa</td>
<td>Mat-tah</td>
<td>Whole body</td>
<td>Stomach ache</td>
<td>Washed and swallowed raw</td>
</tr>
</tbody>
</table>

*The local names of the animals are given in Khari language*

**Figure 3:** Some of the animals being used in traditional medicine by people of Sohiong Village, East Khasi Hills district of Meghalaya. (a) Chicken, Gallus domesticus (b) Crow, Corvus splendens (c) Cow skin (d) Dragonfly, Anisoptera (e) honeybee, Apis cerana (f) Cockroach, Periplanata americana (g) Snail, Pila globosa.
DISCUSSION

Animals have been systematically used for the treatment of numerous diseases; however, little is known about their pharmacological potential (16). The present study describes the traditional knowledge of the Khasi inhabitants of Sohiong village, East Khasi hills district of Meghalaya, India in treating various kinds of disease using different animals and their byproducts/parts. The information about local name of the animals, part or product used to cure and methods of preparation were provided by the informants/ respondents. In this study, 13 animal species were reported which are being used for 18 medicinal purposes. These animals were used as whole or body part or byproduct like milk, blood, organ, bones etc. for the treatment of different kind of ailments including tuberculosis, asthma, weakness, cancer suspected cases etc. (Table 1). Many ethnic communities widely use domestic animals and their products in traditional medicines, because they reside in village where many domestic animals are easily available for domestic animals based medicines. The people in Sohiong village, were found to lack proper schooling education, but they have knowledge about the use of local animals and plant resources for traditional medicinal and other religious purposes. From traditional knowledge point of view it was found that males are more familiar and responsive to traditional zootherapeutic medicine. Few of the animals and animal products used by the local people are shown in Fig. 3. The percentages of animals which constitute the zootherapeutic practice in the study are shown in Fig. 4. From the studies conducted it was also seen that respondents in the age group 60-75 years (Fig. 2) had deeper/more knowledge on the use of traditional medicine. When enquiries were made, their response was that they have acquired the knowledge from their ancestors and through their experience in practicing to heal their families and friends.

From ancient time animals, their parts, and their products have constituted part of the inventory of medicinal substances used in various cultures. This phenomenon is marked by both a broad geographical distribution and very deep historical origins (1). The erosion of long-practiced traditional knowledge of medicinal animals is a global phenomenon, which is happening faster because of competition from allopathic medicine and disinterest of younger generations. Therefore, it is suggested that establishment of socio-ecological system through sustainable management and conservation of biodiversity may contribute tremendously to understand this indigenous system as a reliable source of medicine. Traditional medicine is also a potential source of understanding to the discovery of new drugs to the modern medicine, though laboratory studies about the chemical and biological properties of these products, which would validate their effectiveness in the treatment
of diseases and consequently their relevance to human health, are surprisingly rare and still preliminary (17). The significance of highlighting the use of a number of animal-based drugs to treat various diseases by different ethnic communities of India have been documented by many authors, in different regions. Reports on traditional zootherapeutic medicine from some of the States of North-eastern part of India were also documented such as Assam, (18, 19, 9) and Nagaland (20, 21). Although many reports on herbal medicine from Meghalaya are available (22, 23), till date no report and documentation on zootherapeutic medicine from the State of Meghalaya has been done. Thus, the present report is probably the first of this kind to document some zootherapeutic application being followed by the Khasis in Sohiong village, East khasi Hills district of Meghalaya, India. Our results demonstrated the persistence of traditional medicine practice in Sohiong village, that the locals are still dependent on indigenous knowledge for primary health care. This knowledge may help in planning strategies of conservation, management and sustainable use of animal resources in traditional medicine. However, further studies are required for scientific validation to confirm medicinal value of animal and animal products.

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