



Research Article

Traditional Ethno-veterinary knowledge prevalent amongst the Karbi tribe residing in Karbi Anglong, Assam, India

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Abstract

The present paper is an attempt at inventorising the traditional knowledge prevalent amongst the Karbi tribe pertaining to ethno-veterinary and livestock health practices. A total of 19 plant species and other non-plant material of ethno-veterinary importance in Karbi Anglong district of Assam were documented throughout the study period. Among these 19 recorded species, most of the medicinal plants are herbaceous and also available in the locality. Various plant parts including whole plant, leaf, stem, root, bark, seed, trunk, and fruit are used for ethno-veterinary preparation but the leaves constituted the major portion of plant parts used, followed by roots and whole plant. Out of 21 ethno-medicinal preparations, 13 preparations have been administered in the form of a single herb, and the rest 8 preparations were used as a combination of herbs and other materials. It was observed that the knowledge regarding ethno-veterinary medicine is still surviving among the elderly members of the communities. However, modern medical healthcare especially, the veterinary section in developing areas is reducing the use of medicinal plants for the treatment of livestock, and therefore, the practice of traditional knowledge for curing animal ailments is diminishing.

Keywords ethno-veterinary, Karbi anglong, phytotherapy, traditional healthcare

Introduction

In the ecosystem, nature provides different types of services like supporting services, provisioning services, regulating services, and cultural services. Amongst all these services, plants are the most fundamental basis for all life on Earth. Apart from supplying food to nearly all terrestrial organisms (including humans) and regulating the climate through the process of photosynthesis (producing oxygen and absorbing carbon dioxide), plants are significant and elemental sources of various medicinal traits for the treatment of ailments/diseases of human as well as their livestock and application of these medicinal plants as a source of drugs in treating diseases (besides, human and animal) has been a traditional practice. Therefore, traditional knowledge is the result of generation-long trial and error practices prevalent amongst almost all communities and more specifically, communities residing in close contact with forests. In other words, traditional knowledge refers to the knowledge, innovations, and practices of indigenous and local communities around the world.


Livestock rearing is also a traditional practice in almost all rural communities in India and the rearing of domestic animals like cattle, goat, pig, and buffalo, etc. is very important because this livestock provide food and

Received: 11 August 2020
Accepted: 28 October 2020
Online: 29 October 2020

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Emer Life Sci Res (2020) 6(2): 60-66

E-ISSN: 2395-6658
P-ISSN: 2395-664X

DOI: <https://doi.org/10.31783/elsr.2020.626066>



non-food items and also used in farming techniques. At the grassroots level, livestock farming supports a sizeable chunk of livelihoods in rural and remote areas. Traditional ethno-veterinary knowledge, in its purview, includes the indigenous knowledge (orally transmitted in most cases) acquired by traditional herbal healers pertaining to the animal healthcare system and its associated skills, practices, beliefs, practitioners, methods, and social structures focused on increasing human well-being using increased stock-raising benefits [1].

In India, the rearing of livestock is a part of the Indian culture where people of different societies have developed their own traditional animal healthy keeping system utilizing time-tested home remedies and techniques (including surgical). The earliest information on the art of caring for animals was provided by the sacred texts of the Vedic era that is called 'Ayurveda' [2]. The Indian villages with their rich and efficient ethno-veterinary traditions form an integral part of playing an important social, religious, and economic role. They comprise of belief, knowledge, practices, and skills about health care and management of livestock [3].

Ethno-veterinary practices are more common in developing and under-developed countries due to different socio-economic factors [4] but it may get extinct or may be endangered due to the current rapid changes in the socio-economic, environmental, and technological scenario. According to the World Health Organization, at least 80% of people in developing countries rely mainly on indigenous practices for the control and treatment of numerous diseases influencing both human beings and their animals [5]. This rising interest in traditional practices has been kindled by the recognition of a few effective ethno-veterinary medicinal products. Due to the low cost, easily accessible, safe, and almost no side effects of these ethno-veterinary traditional preparations with medicinal plants which is been used for the treatment and prevent livestock diseases.

As around the world, a lot of work or studies have been done on traditional knowledge by applying on ethno-veterinary practice for curing the ailments/diseases in livestock. Even in the north-eastern part of India, a lot of studies have been carried out on the subject but studies on traditional knowledge on ethno-veterinary practices in Karbi Anglong are missing. Thus, to fill this gap the present study was conducted to document the ethno-veterinary practices of the people in Karbi Anglong district of Assam.

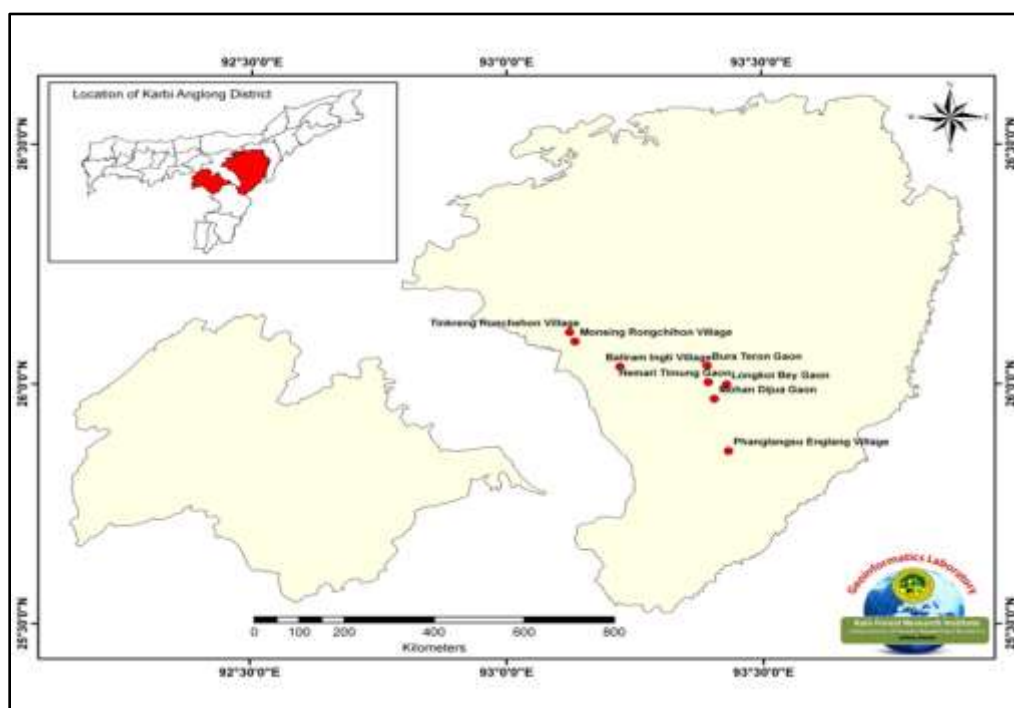


Figure 1. Study area in Karbi Anglong District



Methodology

Study Area

Karbi Anglong is situated in the central part of Assam and surrounded by Nagaon and Golaghat district in the north, Dima Hasao, and Nagaland in the South. Hojai district is dividing East and West Karbi Anglong. The district is covered with dense tropical forest in hills and plains areas are situated between 25°33' N to 26°35' N Latitude and 92°10' to 93°50' E Longitude (Figure 1).

Table 1. List of the ethno-veterinary medicinal plant species recorded from the study area

S. No.	Scientific Name	Common Name	Local Name	Family	Habit
1.	<i>Hibiscus sabdariffa</i> Linn.	Roselle	<i>Hansorang</i>	Malvaceae	Herb
2.	<i>Oryza sativa</i> Linn.	Asian rice	<i>Hor</i>	Poaceae	Herb
3.	<i>Colocasiaspp</i>	Taro	<i>Dud Kosu</i>	Araceae	Herb
4.	<i>Cissusadnata</i> Roxb.		<i>Hanrisong</i>	Vitaceae	Climber
5.	<i>Carica papaya</i> Linn.	Papaya	<i>Mensapi</i>	Caricaceae	
6.	<i>Ocimum Tenuiflorum</i> Linn.	Tulsi	<i>Tulsi</i>	Lamiaceae	Herb
7.	<i>Costus speciosus</i> J. Konig	Crepe ginger	<i>Ai-Upo</i>	Costaceae	Herb
8.	<i>Pogostemon Parviflorus</i> Benth.		<i>Hanbipo</i>	Lamiaceae	Herb
9.	<i>Syzygium cumini</i> Linn.	Black plum	<i>Prampri</i>	Myrtaceae	Tree
10.	<i>Paederia foetida</i> Linn.	Skunkvine	<i>Rikangkimi</i>	Rubiaceae	Vine
11.	<i>Cannabis sativa</i> Linn.	Marijuana	-	Cannabaceae	Herb
12.	<i>Cissus quadrangularis</i> Linn.	-	-	Vitaceae	Climber
13.	<i>Cynodon dactylon</i> Linn	Bermuda grass	<i>Dubori</i>	Poaceae	Herb
14.	<i>Zea mays</i> Linn.	Corn	<i>Theng-thei</i>	Poaceae	Herb
15.	<i>Dioscorea cayennensis</i> Lam.	-	<i>Cremalu</i>	Dioscoreaceae	Climber
16.	<i>Pennisetum typhoideum</i> Linn.	Pearl millet	<i>Tamir</i>	Poaceae	Herb
17.	<i>Citrus aurantifolia</i> Christm.	Key lime	<i>Narang ashi</i>	Rutaceae	Shrub
18.	<i>Moringa oleifera</i> Lam.	drumstick tree	<i>Sozina</i>	Moringaceae	Small Tree
19.	<i>Dillenia indica</i> Linn.	Elephant apple	<i>Plimplam</i>	Dilleniaceae	Tree

Methods

This study was conducted in six different villages namely, Longkoi Bey, Hemari Timung, Bura Teron, Mohan Dijua, Phanglangsu Englang, Baliram Ingti and Tinkreng Ronchelon located in different blocks of East Karbi Anglong district (Figure 1). Fieldwork was done during May and June, 2019. Prior Information Consent (PIC) was obtained from the community and village headman before carrying out the study. Data was collected using the procedures of Focused Group Discussion and semi-structured Personal Interviews. Plant species were cross-examined with the available literature, photograph, and identified with the help of plant taxonomists of Rain Forest Research Institute, Jorhat.



Results

A total of 19 plant species and other non-plant of ethno-veterinary importance were documented throughout the study period (Table 1). Ethnic people of Karbi Anglong use various plant parts included the whole plant, leaf, stem, root, bark, seed, trunk, and fruit. Among all plant species used for the treatment of livestock diseases, most of them were herbaceous. Leaves constituted the major portion of plant parts used, followed by roots and the whole plant. The administration of plants included both oral and topical; for most diseases, oral administration was followed. Out of 21 ethnomedicinal preparations, 13 preparations have been administered in the form of a single herb, and the rest 8 preparations were used as a combination of herbs and other materials (Table 2 and Table 3).

Table 2. List of medicinal plants used in Karbi Anglong district for animal ailments

Diseases/ Ailment Name	Name of Animal	Scientific Name	Local Name	Plant Parts or in Combination
Loose Motion	Hen, Duck	<i>Hibiscus sabdariffa</i>	Hansorang	Leaf
		<i>Oryza sativa</i>	Hor	First bottle
Iron Deficiency	Pig	<i>Colocasia spp.</i>	Dud Kosu	Stem + Leaf
Bone fracture	Cow, Goat, Pig	<i>Cissus adnata</i>	Hanrisong	Stem
		<i>Cissus quadrangularis</i>	--	Stem
Milk Lactation	Pig	<i>Carica papaya</i>	Mensapi	Fruit + salt
Indigestion	Cow, Goat, Pig	<i>Ocimum tenuiflorum</i>	Tulsi	Leaf + honey
Jaundice	Dog	<i>Costus speciosus</i>	Ai-Upo	Root
Pain	Cow, Dog	<i>Pogostemon parviflorus</i>	Hanbipo	Leaf
Dysentery &	Cow, Goat, Pig	<i>Syzygium cumini</i>	Prampri	Stem bark + curd
		<i>Paederia foetida</i>	Rikangkimi	Leaf
		<i>Cannabis sativa</i>	--	Leaf
Vomiting	Cow, Goat, Pig	<i>Syzygium cumini</i>	Prampri	Fruit + salt
		<i>Cynodon dactylon</i>	Dubori	Whole plant
Weakness	Cow, Goat, Pig	<i>Zea mays</i>	Theng-Thei	Whole plant
Delayed Growth	Cow, Goat, Pig	<i>Pennisetum typhoideum</i> + <i>Dioscorea cayennensis</i>	Tamir + Cremalu	Whole plant
Discharge of Mucus (Bo)	Cow, Goat, Pig	<i>Citrus aurantifolia</i>	Narang Ashi	Fruit + salt
Maggots or Tick on Skin/ wound	Cow, Goat, Pig, Dog	<i>Moringa oleifera</i>	Sozina	Root
		<i>Calcium Hydroxide</i>	Saini	Powder + water
Stomach Ache	Cow, Goat	Alkali	Phelu	Alkali + Water
	Cow, Goat, Pig	<i>Dillenia indica</i>	Plimplam	Fruit + Water
Mange	Dog	Ash	Phelu	Ashes + water

It was also observed that the usual method was to chop the plant or plant part into small pieces and mixed it with boiled water, honey, salt, or rice. Even sometimes, juice was obtained by crushing the plant and mixing it with other fodder items for effective result. The study also reveals that the village people of age-group of 20-50 years did not remember the plant species or they did not know about the traditional ethno-veterinary practices because they assimilated the modern knowledge system.

However, the present study reveals the reliance on wild resources by local inhabitants rather than their cultivated counterparts (Figure 2). Nevertheless, an increase in population, urbanization, overgrazing, habitat loss and degradation and commercial use of land expansion like rubber plantation has depleted many natural resources, as is evident in recent years.

Discussion

Among the 19 recorded plant species, it has been found that most of the medicinal plants are of the herbaceous type which depicts that their frequent use in the preparation of ethno-veterinary remedy and also



Table 3. Mode of administration of plant based medicine in different disease

Loose motion	It generally prevails in Hen and duck. To cure it, fresh leaf of <i>Hibiscus sabdariffa</i> extracts it and boiled with water for 10 mins. Add this mixer with any other feed items like rice to stop and cure the loose motion. Even, first few drops of rice beer are also used which is strong in nature by mixing thoroughly with other feed items.
Iron Deficiency	Stem and leaf of <i>Colocasia</i> spp. is been extract and boiled with water for 15 -20 mins. And mix with other feed items to gain iron for pig.
Bone Fracture	In cattle, goat or pig, when bone fracture is occur, then fresh stem of <i>Cissus adnata</i> or <i>Cissus quadrangularis</i> is crushed to make it paste form. And applied on the affected part and kept band aid until cured.
Milk Lactation	In pig, when milk lactation occurs, from <i>Carica papaya</i> tree 2-3 fruit is extract and mixing it with salt, and given it directly to consume to stop lactation.
Indigestion	When indigestion occurs in cattle, goat or buffaloes, 4-5 leaf of <i>Ocimum tenuiflorum</i> is crushed with honey and mixing it with water and consume it orally for digestion.
Jaundice	During Jaundice in Dog, root part of <i>Costus speciosus</i> is crushed to extract the juice and mix it with other feed items to cure jaundice.
Pain	Any pain in cattle, goat or dog, 4-5 leaf of <i>Pogostemon parviflorus</i> is crushed to extract juice and consume it orally to get relief from pain.
Dysentery	During dysentery, grinding the stem bark of <i>Syzygium cumini</i> mixed with curd to make paste form and consume it orally until cure. Even, 20-25 leaves of <i>Cannabis sativa</i> is given directly to chew until it gets cured.
Vomiting	During vomiting in cattle, goat or pig, fresh fruit of <i>Syzygium cumini</i> and 8-10 whole plant of <i>Cynodon dactylon</i> is given by extracting juice and adding small amount of salt.
Weakness	When weakness felt by cattle, goat or pig, than whole plant of <i>Zea mays</i> is boiled with water for about 10 minutes and take it orally to gain strength.
Delayed Growth	The whole plant of <i>Pennisetum typhoideum</i> and <i>Dioscorea cayennensis</i> is boiled together with water and take it orally to regain the growth of the cells.
Decharge of mucus (Bo)	When cattle, goat or pig get infected by bacteria, than 10 gm fruit of <i>Citrus aurantifolia</i> , which is preserved with salt for 7-8 years is given directly to discharge of mucus through feces.
Maggots or Tick on skin/wound	When any maggots or tick on skin/wound of cattle, goat, dog or pig, than root part of <i>Moringa oleifera</i> is crushed to extract juice is use. And also use, Calcium Hydroxide mixes it with water to make paste form and applying it in affected part of the body until gets cured.
Stomach Ache	During stomach ache, alkali adding with water which formed after burning whole <i>Musa</i> plant. Than mixed with other feed items to take orally and get relief from stomach ache. Additionally, fruit of <i>Dillenia indica</i> is also use by boiling with water to get relief.
Mange	During this skin disease in dog, burnt ashes of any plant species were used by mixing with water and applying directly in affected parts of the body until cured.

indicates the availability of those herbs in the locality. The plant species recorded in the present study were cross-checked with other literature [6-10]. In the present work, the traditional medicine prevailing amongst the village folk of Karbi Anglong district, it was found that many of the rural people are relying upon traditional medicine in their daily life. The study documented that the people of the *Karbi* tribe use the stem of *Cissus adnata* or *Cissus quadrangularis* for bone fracture in Cow, goat, or pig by crushing the stem until its paste for and applied on the affected area and kept band-aid until cured. This similar species is used for treatment by *Chiru* tribe [7], *Halam* tribe [6] and *Tiwa* tribe [8] but the *Chiru* tribe use leaves part only [7]. For dysentery, the *Karbi* tribe uses fruit and *Halam* tribe in Hailakandi district uses stem bark of *Syzygium cumini* to stop dysentery [6]. *Cannabis sativa* is also been used for the treatment of dysentery in livestock by the *Karbi* and other tribes also [7-8]. For vomiting, *Cynodon dactylon* is given to livestock and a similar finding was observed by Das and Bordoloi [8] for *Tiwa* tribe. Freshly crush leaves of *Paederia foetida* (Rikang Kimi) are reported to be used to prevent indigestion in livestock by *Karbi* tribe and the same therapeutic practice is also reported by different ethnic groups in Kamrup (Rural) district [9]. Fruit of *Dillenia indica* L. used as a medicine for stomach ache by *Karbi* tribe which is also practiced by the ethnic groups of Kamrup rural district for their cow, goat, and pig [9] and *Nepali communities* in Nagaon and Sonitpur district [10]. *Karbi* farmers or people also use leaf or root parts of *Moringa oleifera* Linn tree which are crushed with few drops of water for removing tick or maggots from skin/wound and are externally applied. A similar process is followed by ethnic groups of Kamrup Rural district [9]. Some of the



Figure 2. A, B: Typical pig rearing, C: Typical hut for chicken rearing, D: Commercial Land expansion, E, F: Data collection from the field, G: Rice beer (*Karbi*), H: Ashes (collected from *jhum* fields), I: *Paederia foetida*, J: *Colocasia spp.*

other products like ashes from *jhum* cultivation, alkali, and the first few drops of rice beer which are also used as a medicine and help in treating livestock ailments or disorders. For instance, Mange in dog or cat where ashes plus water is mixed and applied on an infected area. Thus, many plant species are used for the treatment of various disorders. Such indigenous knowledge indicates that the local communities in the study area have been able to carry this ancient wisdom. Due to poor road connectivity and inadequate facilities in the veterinary health service sector the people of some remote areas faced problems during the treatment of animals. For this reason, *Karbi* communities still depend on various medicinal plants for treatment in most of the diseases.

During the focus group discussion in fieldwork, they said that due to the present knowledge system, the acquired traditional knowledge from generation by generation is being affected and left out i.e. acculturation. They also said that the present governing system in society is very rigid due to which activities like cutting out the trees, cutting the hills, expanding the town and urban areas by clearing up the forests, etc. causes a loss of the huge amount of rare medicinal and exotic species in the forest.

Conclusion

The results of this current study demonstrate the level of traditional knowledge on medicinal plants and their utility in livestock treatment amongst the *Karbi* tribe residing in Karbi Anglong district of Assam, India. Ethno-veterinary practices serve as an alternative option for livestock farmers who are unable to access allopathic drugs for myriad reasons for livestock health problems. It is observed that the knowledge regarding ethno-veterinary medicine is still surviving among the elderly members of the rural communities in the district. However, modern medical healthcare especially, the veterinary section in developing areas is



reducing the use of medicinal plants for the treatment of livestock, and therefore, the practice of traditional knowledge for curing animal ailments is diminishing. Further, a detailed comprehensive study of ethno-veterinary practices of *Karbi* tribes may give a more detailed account of medicinal plants used for the treatment of domestic animals in the area, therefore the same is recommended.

Acknowledgements

The Authors would like to thank the Director, Rain Forest Research Institute for all the institutional facilities. The Authors would also like to express their gratitude to National Mission on Himalayan Studies for funding support. Further, we acknowledge the help received from the Karbi Anglong Autonomous Council and the Department of Environment & Forests, Government of Assam (India).

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