Some ethnozoological uses of Birhor tribe of West Bengal, India

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Abstract

This paper deals with the ethno zoological knowledge on 29 domestic and wild animals used by Birhor tribe, West Bengal. The scientific name is followed by local,common/English name, parts used, method of uses, mode of uses and frequency of citation in percentage has been tabulated. It shows that *Melanochelys trijuga* is getting the highest frequency of citation (100%) for skin disease and *Varanus bengalensis* is getting the lowest frequency of citation (20%) for the convulsion.

Keywords: *Ethnozoology, Traditional medicine, Birhor, Purulia, West Bengal*

Introduction

Ethnozoology, the branch of Ethnobiology investigates the variety of interactions between human and animals. Knowledge of human societies have accumulated concerning animals as well as their significance to the people and their uses. Since ancient time, faunal derived products are used in many aspects especially as food, but also as tool, ethnomedicinal and magico-religious purposes. Folk beliefs, religious doctrines, species-specific taboos towards the animals by hunting gatherer tribe can be determined as a conservation practices and biodiversity protection. Zootherapy, uses of parts of wild and domestic animals and their by-products (eg. hooves, skins, bones, feathers, tusks) as an important ingredients in the preparation of curative, protective and preventive medicine. Zootherapeutic practices using mammals, fish, reptiles, birds, mollusks and insects, including threatened species are found in worldwide in different countries like Latin America, Africa, China, India and Europe (Alves, 2012). In India, nearly 15-20 percent of Ayurvedic medicine is based on animal-derived substances but the studies on the therapeutic uses of animals and their parts have been neglected. A systematic Ethnozoological investigation was started under All India Co-ordinated Research Project on Ethnobiology (AICRPE) in 1982-1998. The initiative was taken by Dr. M. S. Swaminathan, the then Director of Indian Council for Agricultural Research (ICAR), in 1976 and he felt the urgent need to undertake an ethnobiological study of the tribals of the country to tap and document the fast disappearing life style knowledge system, and wisdom of these people (Pushpangadan *et al*., 2014). In India, Zoo therapeutic practices is common among various tribes like Shoka of Uttaranchal (Negi and Palyal, 2007), Bhill and Saharia of Rajasthan (Sharma, 2002; Mahawar and Jaroli, 2007), Naga and Ao of Nagaland (Jamir *et al.*, 2005; Kakati *et al.*, 2006), Irular, Kurumbar, Kanikkar and Paliyar of Tamilnadu (Solavan *et al.,* 2004), Irular, Mudugar and Kurumbar of Kerala (Padmanabhan and Sujana, 2008) etc. But in West Bengal, only few workers have documented the ethnozoological knowledge of the tribes (Sarkar *et al*., 2014; Chanda and Mukherjee, 2012). Therefore, the present research work has been taken up to document the indigenous zoo therapeutic knowledge of the primitive Birhor tribe of West

Bengal.

Ethnozoological resources used by the Birhors, tribe of Puruliya district of West Bengal, India are enumerated in this paper. It is a western most district of West Bengal is a part of Chotanagpur plateau and lies between 22º43' 00"N - 23º42' 00"N Latitude and 85º49' 00"E - 86º54' 00"E Longitude. It is bounded on the east by West Midnapore and Bankura districts of West Bengal, on the North-West, West and South-West by Jharkhand state. The geographical area of the district is 6259 sq. Km. and total population is 25, 36,516. Due to dry climate, scarcity of water and poor soil condition, this plateau is poorly suited with agriculture causing high incidence of poverty. More than18% of total population is Schedule tribe in this district. The tribal groups of this district are Bedia, Bhumij, Birhor, Chero, Chik-Barik, Gond, Gorait, Hajang, Ho, Karnali, Kora, Korwa, Lodha, Lohara, Magh, Mahali, Mal-Paharia, Munda, Oraon, Santhal, Sauria Pahariya and Savar. The population of Birhor tribe in West Bengal is only 1,018 (Bhatt & Bhargava, 2006). The Birhor tribe of West Bengal has been declared as Particularly Vulnerable Tribal Groups (PVTGs) (earlier called Primitive Tribal Group or PTGs) by Government of India. The PTGs are the tribal communities among the STs who live in near isolation in inaccessible habitats and are characterized by a low rate of growth of population, pre-agricultural level of technology and extremely low level of literacy (Ministry of Tribal Affairs: Govt. of India). Birhor tribes are the hunter-gatherer indigenous people and endemic in Puruliya district, West Bengal. This particular tribe utilizes the flora and fauna of the foothill of Ajodhya hill and mostly engaged to capture the small animals like porcupine, rabbit, peacock, pig and monkey generation after generation. The objective of this work is to document the tribal knowledge regarding the zoo therapeutic resources before their extinction and also find out the identification of important formulations according to their relative effectiveness which may give a clue to investigate biological compounds obtained from these animal products.

Methodology

A field survey was conducted at Bareriya (N 23°11'18. 5" and E 86°04'47.8") and Bhuapatipalli (N 23°09'42.0"and E 86°03'05.8") villages of Puruliya district, West Bengal during 2014-2015 by performing interview through structured questionnaire among 15 selected Birhor informants (11 men and 4 women). Prior Informed Consent (PIC) was also taken from the tribal informants. Traditional Knowledge regarding zoo therapeutic remedies was documented and the animals under this study were identified adopting *ex-situ* documentation method through which migrant speakers of endangered 'Birhor' language represent a valuable resources through which these languages may be conveniently documented (Lahe-Deklin and Si, 2014). Data of this study were collected through formal and informal interview as well as showing them photographs of animals which were using as the best two-dimensional visual stimulus for eliciting Traditional knowledge. In absence of real specimens, photographs were taken from Google images based on available local fauna and showing the tribal to collect the ethno zoological information. Data is tabulated as Zoological names of animal followed by their common name in Birhor and in English along with their medicinal uses and mode of preparations.

For data analyses, Frequency of citation of animals was used in identification of species according to their relative effectiveness. In this study, Frequency of citation calculated that the percentage of respondents claiming the use of a certain animal for the same major purpose.

Results and Discussion

In this finding, animal name (Scientific name, Birhor name and common English name), parts

used, uses including method of preparation, mode of administration along with frequency of citation were summarized (Table 1). Entire organisms and their body parts or products like horn, flesh, skin, poison, shell, egg, liver, tooth, embryos, feather, vocal cord, skull, feces, skin, fat, oil, wax and honey are used in traditional remedy by the tribes. Domesticated animals like rabbit, cow, pig, pigeon and peacock and among the wild animals, the products of snakes, monkey, mongoose, porcupine,and deer are mostly used by the tribes. For hunting small animals they are using a net, which is made up from the fiber of *Bauhinia vahlii*.

Table 1 Enumeration of Ethnozoological resources used by Birhor tribe, West Bengal

Sl. No.	Scientific Name	Birhor name/ Common English Name	Part used	Uses	Fc%
1	*Aquarius remigis* (Say, 1832)	Nachni/ Da feria/ Water strider	Whole body	Whole body is used to given to the patient of convulsion	40
2	*Axis porcinus* (Zimmermann, 1780)	Jilu/ Deer	Horn,flesh and embryo	Horn is used to make paste with water and apply it on skin eruption of the head of the babies (New born rashes)	60
				Flesh is eaten	60
				Immature embryo is dried and used to make the medicine of convulsion	46. 67
3	*Bandicota bengalensis* (Gray,1835)	Guru/Rat	Flesh	Flesh is eaten after cooking (fried) with oil	46. 67
4	*Bostaurus indicus* (Linnaeus, 1758)	Dangri/Cow	Skin	Skin is sold to make musical instrument	73. 33
5	*Bungarus fasciatus* (Schneider, 1801)	Sakhamuti bin/ Branded krait	Flesh and poison	Flesh is consumed after frying	46. 67
				Poison is collected and sold to other people for making antibiotics	60
6	*Columba livia* (Gmelin, 1789)	Paroa/ Pigeon	Flesh	Flesh is consumed after cooking	60
7	*Cornu aspersum* (O. F. Müller, 1774)	Gugli/Snail	Flesh	Flesh is eaten	73. 33
8	*Crassostrea gigas* (Thunberg, 1793)	Jhajni/ Common oyster	Flesh and shell	Flesh is consumed after cooking	60
				Shell is used as bio-fertilizer in agricultural field.	80
9	*Duttaphrynus melanostictus* (Schneider, 1799)	Choki/Toad	Flesh	Flesh is eaten after cooking with oil, salt, black pepper, turmeric and red chilies.	80

10	*Gallus gallus* (Linnaeus, 1758)	Kukri/Red jungle fowl	Raw egg and liver	Raw eggs are burnt and the ash applied externally on the burnt surface of the body.	46. 66
				The oil of the liver is taken and used to make medicine for skin eruption.	46. 66
11	*Herpestes auropunctatus* (Hodgson, 1836)	Neul/ Mongoose	Tooth	Tooth is taken to remove the snake poison from the snake bitten part of the body. Tooth is used as operation instrument	80
12	*Hoplobatrachus tigerinus* (Daudin, 1802)	Choki/Frog	Flesh	Flesh is taken as food after cooking and it helps to gain strength and overcome impotency	80
13	*Hystrix indica* (Kerr, 1792)	Sahi/ Porcupine	Embryo and gastro-intestine	Immature embryo is dried and used to make the medicine of convulsion	60
				A pinch of dried gastro-intestine is mixed with milk and administrated orally to cure stomach pain	46. 66
14	*Lepus nigricollis* (F. Cuvier, 1823)	Kulhai/ Rabbit	Flesh and embryo	Flesh is eaten after cooking with spices, salt, red chili	40
				Immature embryo is dried and used to make the medicine of convulsion	60
15	*Manis crassi caudata* (É. Geoffroy, 1803)	Sonamukhi or Bonrui/ Pangolin	Skin	Skin are sold for economy	20
				Skin is used to make weapon guard	73. 33
				Skin scale is considered as sacred thread to protect from lightning	73. 33
16	*Melanochelys trijuga* (Schweigger, 1812)	Horo/ Bengal Black Turtle	Flesh and shell	Flesh are eaten	80
				Shell dust is applied on burnt part of body to regain original colour of skin	100
17	*Metopidius indicus* (Latham, 1790)	Titir/ Bronze winged jacana	Flesh	Flesh is eaten after cooking	80
18	*Naja naja* (Laurenti, 1768)	Khorish Bing/ Cobra	Poison	Poison is taken from the snake and sold it	20

19	*Pavo cristatus* (Linnaeus, 1758)	Marah/ Peacock	Feather and vocal cord	Feathers are collected and sold to them who are making mask for a local traditional culture (Chou nach)	60
				Vocal cord is used to make paste and mixed with honey and given orally to the children who are unable to speak	46. 66
20	*Perna viridis* (Linnaeus, 1758)	Jhinuk or Chatni/ Green mussel	Flesh	Flesh is eaten after cooking	80
21	*Pheretima posthuma* (Kinberg, 1867)	Kechua/ earthworm	Whole body	Used as fishing bait to catch fish	80
				Collected earthworm and sell it	60
				Raw earthworm is given to the patient to engulf it for the treatment of night blindness	46. 66
22	*Pteropus giganteus* (Brünnich, 1782)	Badur/Bat	Flesh and feces	Flesh consumed as food after cooking	20
				Feces used as ointment to cure skin burn	60
23	*Ptyas mucosa* (Linnaeus, 1758)	Dhamna bin/ Rat Snake	Skin	Oil extracted from skin is applied externally on the burnt and infection	60
24	*Sciurus carolinensis* (Gmelin, 1788)	Kathbirali/ squirrel	Flesh	Flesh eaten as food after cooking	46. 66
25	*Semnopithecus entellus* (Dufresne, 1797)	Haru/ Monkey	Flesh and skin	Flesh eaten as food after cooking, it is also eat to overcome weakness, fever and pain of the body.	60
				Skin sold to traders	20
				Skull is broken and used to make sacred thread , given to the children for sound sleep	80
26	*Sus scrofa domesticus* (Erxleben, 1777)	Sukor/ Pig	Fat and jaw with teeth	Fat is applied externally as massage to cure rheumatism	46. 66
				Jaw with teeth is used to make sacred thread which protects children from ghost	20
27	*Treron phoenicoptera* (Latham, 1790)	Harial/Yellow footed green pigeon	Flesh	Flesh is eaten after cooking	60

28	*Varanus bengalensis* (Daudin, 1802)	Goii/ Bengal Monitor	Flesh and head	Flesh eaten after cooking	20
				Head part is used to make medicine of convulsion	20
29	*Apis* sp.	Khormosi'/ 'Kathimodhu'/ 'Lottimachi'/ Honey bee	Wax	Wax is used in the treatment of rheumatism	60
				Honey and wax is externally applied on the wound of domestic animals	60

Frequency of citation calculated that the percentage of respondents claiming the use of a certain animal for the same major purpose. The uses of the animals that are commonly cited by the informants are getting highest popularity among the tribe. In this study, *Melanochelys trijuga* is getting the highest frequency of citation (100%) for skin care and *Varanus bengalensis* is getting the lowest frequency of citation (20%) for the convulsion. Those uses of animals received high frequency of citation may prove useful for pharmacological studies in new drug developmental programs.

Flesh of the deer, rat, Indian branded krait, pigeon, snail, common oyster, toad, frog, rabbit, Bengal black turtle, bronze winged jacana, green mussel, lemur, monkey, bat, squirrel, yellow footed pigeon, Bengal monitor are the primary sources of nutrition of Birhor people. They hunted the animals without affecting the balance of ecosystem. Flesh of this animals helped them to get strength and overcome impotency of male. Likewise, other tribal communities like Naga, used to consume flesh of animals to cure tuberculosis, stomach disorders, eye related problems (Jamir and Lal, 2005) and Irular, Mudugar, Kurumbar of Kerala used to cure asthma and chest pain (Padmanabhan and Sujana, 2008). During the study, it was observed that recently Birhors are hunting occasionally or during traditional festival simplications of 'Wild Life Act'.

Fat derived from pig, rat snake is used mostly to cure paralysis, rheumatism, burn and skin infection by the tribes of Puruliya district. Same observation was reported from Kerala (Padmanabhan and Sujana, 2008). In the present study, feces of bat are commonly used as ointment to cure skin burn. It is reported that chitin is the major component of bat feces, the hard material of exoskeleton of their insect prey. This is also useful to cure diseases like dissolving stone, chronic malaria, malaria during pregnancy, tooth ache etc. (Riccucci, 2012).

Birhors are expert to catch snakes like Indian branded krait, cobra to isolate the poison for anti-venom purpose. It is reported that the poison of Indian Branded Krait can cure the disease like cancer (Stanbag, 2015). Antibiotics can be produced also from the poisons. The most important chemical components are Cathelicidin-BF (Peptide antibiotic), Cholinesterase, Proteinases, Adenosine tri phosphate, Phosphodiesterases etc. (Wang *et al.*, 2008).

The skin of the animals like monkey, lemur has been sold to the neighbor villages where people are used to make musical instruments. Skull and skin of the monkey is also used for magico-religious purpose. Skin of the Pangolin has been kept by them as sacred thread to protect them from lightning. Feather of the peacock is also collected and sold for making masks for the traditional dance (Chou Nach) in the district. Vocal cord of the peacock is also used to make remedy to cure deaf and dumb children.

Teeth of Mongoose are used as scalpel to remove the poison from the affected snake bitten part of

human body. It is their belief that something (may be enzymes) is in the teeth of the Mongoose, that's why they can eat from the middle part of the snake. After eating the middle part, Mongoose has the capacity to join the cut portion of the snake and the snake become alive.

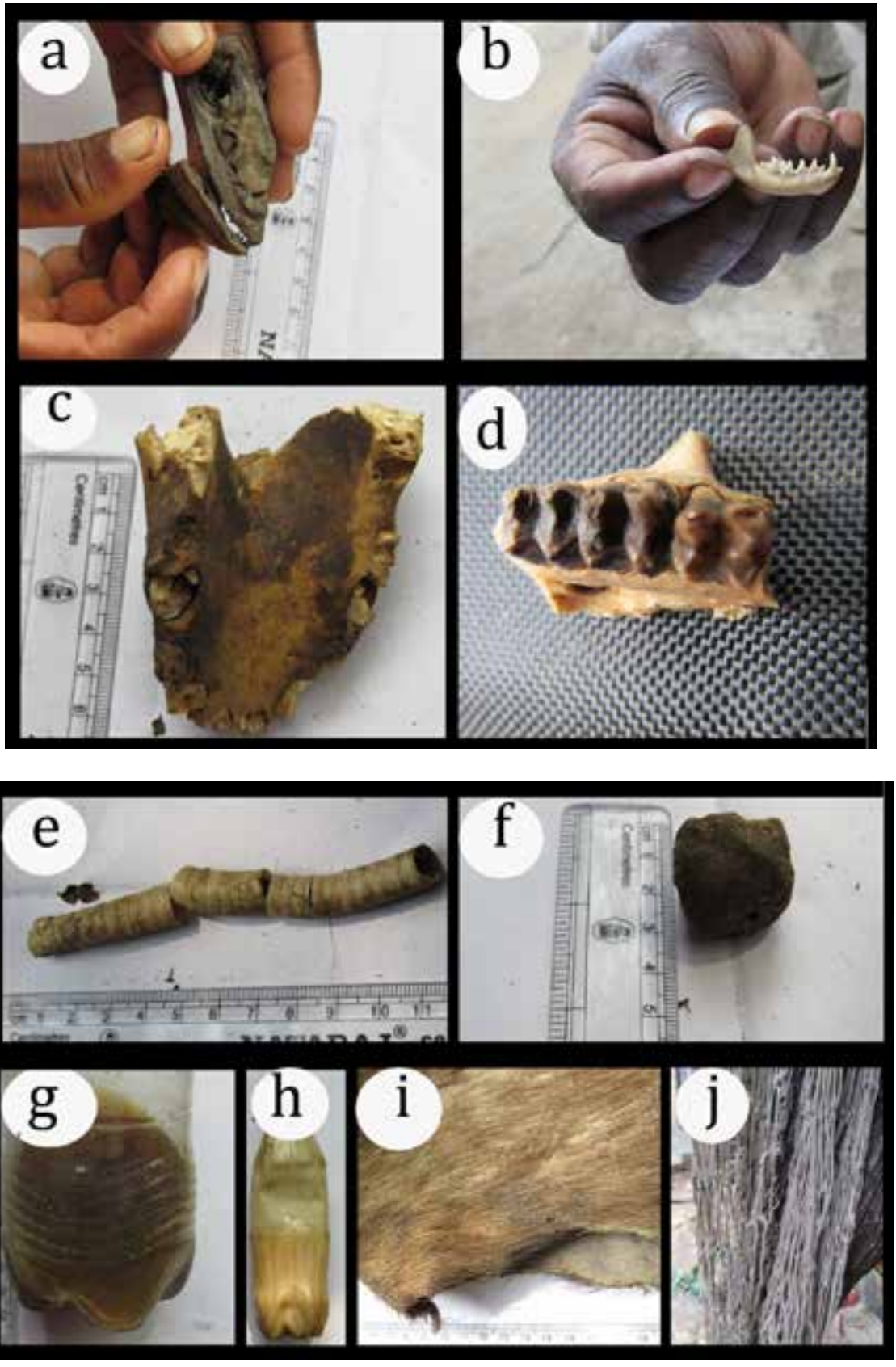
Embryo is known as 'Rimi' in Birhor dialect. They collect and dried embryo of porcupine, rabbit or deer for making remedy for the treatment of convulsion. It is said that if embryo of three animals are mixed together will get better result, but single embryo can also be used in case of unavailability of three animals. On the basis of IUCN Red data List *Axis porcinus* and *Manis crassi caudata* have been categorized as endangered. *Melanochely strijuga* as near threatened but others are least concerned category. According to the Birhor informants, presently one type of horn bill (*Gorur pakhi*) and one small snake (*Bohurupi bin*) have not been available in the area. So, it is very urgent to conserve more local fauna before their extinction.

Conclusion

Birhors are hunter-gathering tribe and they may have been experts in hunting small mammals, but this practice has little bit stopped due to ban and unavailability of faunal resources. During this study, it was observed that, the tribe collect some dead animals or some available fauna from the forest and trade them in neighboring areas or to some entrepreneurs with extremely low amount which help them to fulfill their daily needs. Birhor may have the potential to become stakeholders of the traditional ethnozoological knowledge; attempts should be taken to protect their rights through Intellectual Property Rights. The equitable sharing of benefits should also be given to the tribal people for their indigenous knowledge.

Acknowledgements

We are very thankful to the Director, Botanical Survey of India for all necessary facilities and financial support. We are grateful to the informants and local people who shared their ethno zoological knowledge and permitted to take the photographs. Without their contribution, the study was impossible.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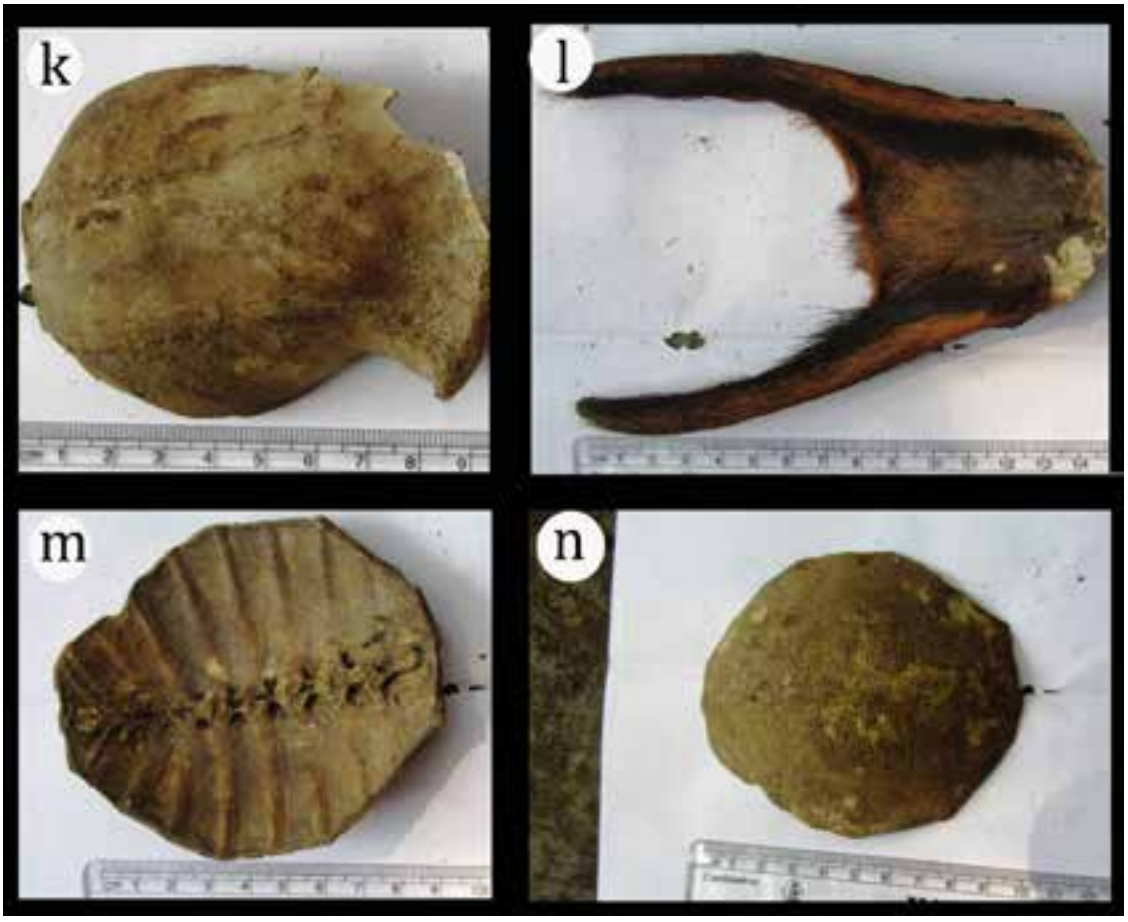

Ethnozoological resources used by Birhor tribe of West Bengal

a. Head of bengal monitor (*Varanus bengalensis*),
b. Teeth of mongoose (*Herpestes auropunctatus*)
c. Jaw portion of pig (*Sus scrofa domesticus*)
d. Teeth of monkey (*Semnopithecus entellus*)
e. Vocal cord of peacock (*Pavo cristatus*)
f. Wax of honey bee (*Apis* sp.)
g. Honey of honey bee (*Apis* sp.)
h. Fat of pig (*Sus scrofa domesticus*)
i. Skin of deer (*Axis porcinus*)
j. Animal catching net made by *Bauhinia valhii*
k. Skull of monkey (Semnopithecus entellus)
l. Horn of deer (*Axis porcinus*)
m. Shell of bengal black turtle (*Melanochely strijuga*)
n. Scale of pangolin (*Maniscrassi caudata*)

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