

Identification of Medicinal Animals in Traditional Medicine in Rural Central Java

(A Preliminary Result of Ethno-Zootherapeutical Study)

Fadly Husain¹, Baiq Farhatul Wahidah²

¹Faculty of Social Sciences, Universitas Negeri Semarang
²Faculty of Science & Technology UIN Walisongo Semarang
Semarang, Indonesia
Corresponding email: fadlyhusain@mail.unnes.ac.id

Abstract—Indonesia is one of the countries that have very rich natural resources. The potential of this natural resource is flora and fauna. It can be utilized by the state as a potential power for sustainable human development. Indonesian people have traditional knowledge in utilizing these natural resources. This includes the knowledge and practices of using animals as a traditional medicine. Traditional medicine knowledge has a very important role, especially the type of health services that can be strived independently by the community. By the community, animals can be used as a source for treatment. The study of animals used as medicines in traditional medicine systems has not been widely studied in Indonesia. This article is a preliminary result of an ongoing research that focuses on the utilization of animals as a traditional medicine that is known and practiced by people in rural Central Java. The research method used in this study is qualitative by relying on open interview techniques to obtain information related to knowledge and practice of animal treatment from 26 informants. However, some data related to the animals, then combined in an index table and some detail information is formulated into graphical form. The result shows that people in rural Central Java are consuming animals as a medicine from all groups of animals such as mammals, birds, reptiles, amphibians and fish. There are total of 30 species from 26 families commonly used as medicine. People believe that animal base medicine has potential in curing diseases such as diabetes, asthma, skin diseases, and so on. All parts of the animal body and certain parts of animals such as meat and bile are used as medicinal ingredients in various ways such as cooking, fried or even consumed raw.

Keywords—Central Java, ethno-zootherapy, medicinal animal, traditional medicine, traditional zootherapeutic

I. INTRODUCTION

Indonesia is one of the countries that have very rich natural resources. The potential of this natural resource is flora and fauna. For some species of plants and animals is the largest in the world. In detail there are 80,000 species of plants and 10,000 species of animals [1]. It can be utilized by the state as a potential power for sustainable human development [2]. Indonesian people have traditional knowledge in utilizing these natural resources

[3],[4],[5]. This includes the knowledge and practices of using animals as a traditional medicine. Traditional medicine knowledge has a very important role, especially the type of health services that can be strived independently by the community. Animals can be used by the community as a source for treatment. The study of animals used as medicines in traditional medicine systems has not been widely studied in Indonesia, especially in anthropological perspective [6]. A different fact occurred in the same study in several areas such as in India, Brazil and even in Europe [7],[9]. The studies are also directed to interdisciplinary approach in which medical ethnobiological studies, including ethno-zoological therapy, not only focus on biological science but also on sociocultural aspects [10]. This article focuses on the utilization of animals as a traditional medicine that is known and practiced by people in rural Central Java.

II. METHODS

A. Study Area

This article focuses on traditional knowledge and practices by using animal as medicine in rural Central Java, Indonesia. The study of medical ethnobiological was conducted in 26 villages, 10 regencies in the area.

B. Methodology

All information in this research was provided by using semi-structured interview method and observation [11]. The study conducted during May-June 2017. We were assisted by some students, who were taking Medical Anthropology course, especially in collecting data. The research question primarily refers to the knowledge of animal species (and local name) that used by people in this area as medicine for maintaining their health. Another question leads to knowledge of ecological setting or habitat of species, availability, treated diseases, process of preparation, route, administration and some rules of consumption, as well as recovery time estimation after consuming the animal-based medicine. All of the questions were made by adapting from research manual on ethnobiology [12],[13]. Furthermore, all collected data

were descriptively analyzed and parts of data were stored into Microsoft Excel 2016 for table display.

III. RESULT

A. Medicinal Animals

This study describes about the knowledge of rural communities in Central Java in utilizing various kinds of animals to treat diseases and as a source for maintaining health. In this study there were 30 species from eight animal groups used in traditional medicine by the community. The animal groups can be seen in Table 1. Insects and mammals are the most widely used group.

TABLE I.

No.	Animal Class	Number of species	Percentage (%)
1	Insects	7	24.1
2	Amphibia	6	20.7
3	Mammalia	5	17.2
4	Reptiles	4	13.8
5	Fish	3	10.3
6	Aves	2	6.9
7	Gastropods	2	6.9
8	Crustaceans	1	3.4

More clearly about the names of 30 species, which are believed to have efficacy as a medicine by the people in rural Central Java, can be seen in the list of names of animals in Table 2. This list is based on the scientific name and local name of the species. These animals are obtained by people from the wild, even though some species are deliberately maintained for their daily needs and medicine supplies.

TABLE II.

No.	Scientific names	Vernacular name
	Amphibia	
1	<i>Megadrilacea, Lumbricina</i>	Cacing Tanah
2	<i>Bufo</i> <i>melanosticus</i>	Bangkong
3	<i>Ranidae, Fajervarya cancrivora</i>	Kodok Ijo
4	<i>Hirudinea, Hirudinea medicinalis</i>	lintah
5	<i>Serpentes</i>	Ule, Ular
6	<i>Serpentes, Elapidae, Naja</i>	Ular kobra
	Aves	
7	<i>Phasianidae, Gallus domesticus</i>	Ayam kampung
8	<i>Apodidae</i>	Burung Walet
	Fish	
9	<i>Channidae, Channa striata</i>	Iwak kutuk, iwak bayong, Ikan Gabus
10	<i>Trichiuridae, Trichiurus lepturus</i>	Gereh Layur, Ikan layur
11	<i>Clariidae, Clarias</i>	Lele
	Crustaceans	
12	<i>Crustaceans, Caridea</i>	Udang

TABLE II, cont.

	Gastropods	
13	<i>Achatinidae, Achatina fulica</i>	Bekicot, Kicot
14	<i>Ampullariidae, Pila ampullaceae</i>	Keong sawah
	Insects	
15	<i>Caelifera</i>	Walang, Belalang
16	<i>Anisoptera</i>	Kinjeng, capung
17	<i>Gryllidae</i>	Jangkrik
18	<i>Isoptera</i>	Laron
19	<i>Hymenoptera, Verpidae</i>	Tawon
20	<i>Formicidae, Oecophylla</i>	Angkrang, Semut rangrang
21	<i>Myrmeleontidae</i>	Undur-undur, Bukur, bongkang, kebubukur, kemundur, anak kinjeng dom
	Mammalia	
22	<i>Bovidae, Capra aegagrus hircus</i>	Wedhus
23	<i>Chiroptera</i>	lawet, lawa, lowo, kalong, kelelawar, kampret
24	<i>Leporidae</i>	Kelinci
25	<i>Sciuridae, Marmota</i>	Marmut
26	<i>Callosciurus</i>	Bajing, tupai
	Reptiles	
27	<i>Gekkonidae, Cosymbotus platyurus</i>	Cicak, Cecek
28	<i>Gekkonidae, Gekko gecko</i>	Tokek, Tekek
29	<i>Lacertidae</i>	Kadal
30	<i>Varanus</i>	Mencawak/biawak

B. Used Parts

Based on the data in Table 4, animal meat is the most widely used as animal part in traditional medicine followed by all parts of animal's body, bile, egg, liver and oil as animal product. In addition, there are several parts of the species that only use for one part of the animal such as the sting, honey, mucus, swift saliva and substance from animal's body parts.

TABLE III.

No.	Used parts	No. of species	Percentage (%)
1	Meat	15	51.7
2	Whole	14	48.3
3	Bile	4	13.8
4	Egg	3	10.3
5	Liver	2	6.9
6	Oil	2	6.9
7	Bite/sting	1	3.4
8	Honey	1	3.4
9	Mucus	1	3.4
10	Substance inside the animal's body	1	3.4
11	Swifts saliva	1	3.4

C. Treated Diseases

Asthma is a disease that uses the most types of animals. These animals are *Oecophylla*, *Callosciurus*, *Lumbricina*, *Cosymbotus platyurus*, *Leporidae*, *Fajervarya cancrivora*, *Anura*, *Isoptera*, *Chiroptera*, *Marmota*, *Varanus*, *Gekko*, *Serpentes*, *Naja*, *Myrmeleontidae*, and *Capra aegagrus hircus*.

TABLE IV.

No.	Ailments treated	Number of species	Percentage (%)
1	Asthma	16	55.2
2	Itchy	7	24.1
3	Skin disease	7	24.1
4	Stamina/ Men's vitality	7	24.1
5	Diabetes	5	17.2
6	Wound Healing	5	17.2
7	Heart disease	4	13.8
8	Hypertension	4	13.8
9	Stroke	4	13.8
10	Allergy	3	10.3
11	Cough	3	10.3
12	Fever	3	10.3
13	Kidney disease	3	10.3
14	Pneumonia	3	10.3
15	Blood cycle normalization	2	6.9
16	Cancer	2	6.9
17	Cholesterol	2	6.9
18	Hemorrhoids	2	6.9
19	Liver	2	6.9
20	Rheumatic	2	6.9
21	Typhus	2	6.9
22	Anemia	1	3.4
23	Body immune	1	3.4
24	bone problem	1	3.4
25	Decreasing blood glucose level	1	3.4
26	Diarrhea	1	3.4
27	Eye problem/Cataract	1	3.4
28	Gastritis	1	3.4
29	Giving birth problem	1	3.4
30	Headache	1	3.4
31	HIV/AIDS	1	3.4
32	Low blood pressure	1	3.4
33	Nerve/neural problem	1	3.4
34	Protein source	1	3.4
35	Respiratory tract infection	1	3.4
36	Stop bedwetting	1	3.4
37	Stye /Hordeolum	1	3.4
38	Toothache	1	3.4
39	Uric acid	1	3.4

D. Preparation, administration, dosage, estimate time recovery, used by age and gender

An important process of the use of animals in traditional medicine in rural Central Java is the preparation of medicinal animals, the process of concocting, and its application. The preparation process begins by choosing a medicinal animal based on traditional knowledge whether the animal will be consumed in the form of fresh, dried or raw material. Medicinal animals are considered as the best medicine if it is consumed immediately after processing. In contrast, dried ingredients are made by drying them under the

sunshine for several days before being processed and consumed. While raw medicinal ingredients are drugs that are directly consumed or applied without prior processing, such as egg of *Gallus domesticus* and *Lumbricina*.

There are some methods in processing these fresh and dried medicinal ingredients, that are by pounded, grilled, boiled, steamed and smoked.

In general, these medicinal animals are applied for internal use or taken orally (oral medicine). Usually these medicines are served in the form of food so that it can be consumed in daily routine. Some examples of serving animal-based foods are fried *Fajervarya cancrivora* and *Serpentes* meat which is believed by the community to cure asthma, allergy, bone problems and respiratory tract infection. In addition, there are medicinal animal that are applied external use by applying them to the areas of the body such as the use of mucus of *Achatina fulica* in treating wounds and skin diseases.

However, in consuming medicinal animal, there are several rules that must be considered, especially for those related to time rules, when to apply and who can take the medicine. The rules about the time to consume drugs are more varied, such as being consumed daily, two to three times a day, once a week and also certain times such as it is consumed only at night. Medicine that serving as foods that can be consumed daily include fried foods such as fried *Pila Ampullaceae*, *Caelifera*, *Gryllidae*, *Marmota* and *Cosymbotus platyurus*. Foods are made from *Lacertidae*, *Gekko gekko* and *Naja* can be consumed only at certain times. Other rules also refer to who can take the medicines. There are three groups that are determined by age and gender, only adult, all ages and all gender. Some drugs are only allowed to be consumed by adults such as *Apodidae* (Swifts saliva) as well as the bile and meat of *Serpentes*.

Applying these medicinal animals, the people have traditional knowledge about estimation of recovery time. This estimation can vary based on days, weeks and months. Consuming foods made from *Lacertidae* meat in treating allergy, itchy or skin disease is estimated being cured between one to two days. While diseases that require a longer recovery time (can reach several months) such as the consumption of meat of *Scuridae* for asthma, kidney disease, liver, rheumatic.

IV. CONCLUSION

As explained in the description and the tables above, that the community has traditional knowledge and practices by applying medicinal animals. In this study we found 30 species and divided into eight groups of animals that are commonly used as medicine by rural communities in Central Java. People use the whole body of animals or only certain parts of the animal's body. There are 39 types of diseases that can be cured by using these medicinal animals. In addition, the community has knowledge in preparing, processing, timing in consuming the medicine, and social groups who can consume the medicinal animals

as well as estimation of the recovery time after consuming the medicines.

ACKNOWLEDGMENT

I would like to thank to all informants for interviews and students who participated Medical Anthropology course, Semester 4th, Academic Year 2016/2017 for their contribution in this research.

REFERENCES

- [1] E. A. Widjaja et al., *The Current Biodiversity of Indonesia 2014. Kekinian Keanekaragaman Hayati Indonesia 2014*. Jakarta: LIPI Press, 2014.
- [2] V. Rambe and S. Johnsen, *Indonesia Sustainable Natural Resources Management through PNPM Green Investments*. Jakarta: World Bank, 2013.
- [3] F. Husain and B. F. Wahidah, "Traditional Medicine and Medical Pluralism in Eastern Indonesia (A Literature Review)," in *The 5th International Conference on Education & Social Sciences (ICISS) "The Asia Network: Bringing Time, Space and Social Life Together"*, 2017, pp. 179–186.
- [4] N. L. Etkin, L. X. Gollin, D. Binneendyk, and H. Soselisa, "Ethnomedicine In Maluku, Eastern Indonesia," *Cakalele*, vol. 7, pp. 33–50, 1996.
- [5] M. Silalahi, Nisyawati, E. B. Walujo, J. Supriatna, and W. Mangunwardoyo, "The local knowledge of medicinal plants trader and diversity of medicinal plants in the Kabanjahe traditional market, North Sumatra, Indonesia," *J. Ethnopharmacol.*, vol. 175, pp. 432–443, 2015.
- [6] S. Hidayati, F. M. Franco, and R. W. Bussmann, "Ready for phase 5 - current status of ethnobiology in Southeast Asia," *J. Ethnobiol. Ethnomed.*, vol. 11, no. 17, pp. 1–8, 2015.
- [7] G. Benitez, "Animals used for medicinal and magico-religious purposes in western Granada Province, Andalusia (Spain)," *J. Ethnopharmacol.*, vol. 137, no. 3, pp. 1113–1123, 2011.
- [8] E. S. Oliveira, D. F. Torres, S. E. Brooks, and R. R. N. Alves, "The medicinal animal markets in the metropolitan region of Natal City, northeastern Brazil," *J. Ethnopharmacol.*, vol. 130, no. 1, pp. 54–60, 2010.
- [9] S. Vijayakumar, J. E. Morvin Yabesh, S. Prabhu, M. Ayyanar, and R. Damodaran, "Ethnozoological study of animals used by traditional healers in Silent Valley of Kerala, India," *J. Ethnopharmacol.*, vol. 162, pp. 296–305, 2015.
- [10] A. Pieroni, L. L. Price, and I. Vandebroek, "Welcome to Journal of Ethnobiology and Ethnomedicine," *J. Ethnobiol. Ethnomed.*, vol. 1, no. 1, p. 1, 2005.
- [11] H. R. Bernard, *Research Methods in Anthropology: Qualitative and Quantitative Approaches*, 4th ed. Oxford: AltaMira, 2006.
- [12] M. N. Alexiades, "Collecting ethnobotanical data: An introduction to basic concepts and techniques," in *Selected Guidelines for Ethnobotanical Research: A Field Manual*, M. N. Alexiades, Ed. New York, USA: The New York Botanical Garden Press, 1996, pp. 53–94.
- [13] E. A. Berlin and B. Berlin, "Some Field Methods in Medical Ethnobiology," *Field methods*, vol. 17, no. 3, pp. 235–268, 2005.