AN ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS USED BY RUNGUS COMMUNITY IN KAMPUNG TERONGKONGAN DARAT KUDAT SABAH

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An Ethnobotanical Study Of Medicinal Plants Used by Rungus Community in Kampung Terongkongan Darat Kudat Sabah

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This Final Year Project Report is Submitted in partial fulfillment of the requirements of the degree of Bachelor of Science With Honours

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I hereby declare that this Final Year Project is based on my original work except for quotations and citations which have been duly acknowledge. I also declare this thesis has not been submitted for any other degree student at UNIMAS or other institutions.

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# Table of Contents

<table>
<thead>
<tr>
<th>Content</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approval Sheet</td>
<td>i</td>
</tr>
<tr>
<td>Declaration</td>
<td>i</td>
</tr>
<tr>
<td>Acknowledgement</td>
<td>iii</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>iv</td>
</tr>
<tr>
<td>List of Abbreviations</td>
<td>v</td>
</tr>
<tr>
<td>List of Tables and Figures</td>
<td>vi</td>
</tr>
<tr>
<td>Abstract/Abstrak</td>
<td>1</td>
</tr>
<tr>
<td>1.0 Introduction</td>
<td>2</td>
</tr>
<tr>
<td>1.1 Background of Study</td>
<td>2</td>
</tr>
<tr>
<td>1.2 Problem Statement</td>
<td>5</td>
</tr>
<tr>
<td>1.3 Objective</td>
<td>5</td>
</tr>
<tr>
<td>2.0 Literature Review</td>
<td>6</td>
</tr>
<tr>
<td>2.1 Ethnobotanical Study</td>
<td>6</td>
</tr>
<tr>
<td>2.2 Medicinal Plants in Malaysia</td>
<td>8</td>
</tr>
<tr>
<td>2.3 Rungus Community in Sabah</td>
<td>9</td>
</tr>
<tr>
<td>2.4 Management of Medicinal Plants</td>
<td>10</td>
</tr>
<tr>
<td>3.0 Materials and Methods</td>
<td>11</td>
</tr>
<tr>
<td>3.1 Sampling Sites and Research Study Area</td>
<td>11</td>
</tr>
<tr>
<td>3.2 Interview Session and Botanical Collection</td>
<td>12</td>
</tr>
<tr>
<td>3.3 Identification of Plant Collected</td>
<td>13</td>
</tr>
<tr>
<td>3.4 Preparation of Herbarium Specimens</td>
<td>13</td>
</tr>
</tbody>
</table>
4.0 Result and Discussion

4.1 Demographic Information of Respondent

4.2 Botanical Collection of Medicinal Plants

4.3 Medicinal Plants by Rungus Community in Kampung Terongkongan Kudat Sabah

4.3.1 Medicinal Plant Collection

4.4 Ethnobotanical Knowledge and Usage of Medicinal

4.5 Analysis of Medicinal Plants

4.6 Discussion

5.0 Conclusion and Recommendation

6.0 References

7.0 Appendix

7.1 Questionnaire Forms

7.2 Letter for Conducting Project and Sampling

7.3 Respondent Information

7.4 Botanical Description Forms

7.5 Example of Herbarium Specimens
LIST OF TABLES

<table>
<thead>
<tr>
<th>Tables No</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 4.1</td>
<td>24</td>
</tr>
</tbody>
</table>

List of Medicinal Plant, Family, Local Name, Part Used, Medicinal Used and Application collected from Kampung Terongkongan Darat Kudat Sabah

LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figures No</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>11</td>
</tr>
</tbody>
</table>

Location of Study Area

<table>
<thead>
<tr>
<th>Figure 2</th>
<th>30</th>
</tr>
</thead>
</table>

Mode of Consumption of Medicinal Plants Used by Rungus Community in Kampung Terongkongan Kudat Sabah

<table>
<thead>
<tr>
<th>Figure 3</th>
<th>32</th>
</tr>
</thead>
</table>

Part of Medicinal Plants Used to Treat Human Ailments
LIST OF PLATE NUMBERS

Plate No | Medicinal Plants of | Page
---|---|---
Plate 4.3.1 | (A) *Stachytarpheta jamaicensis* (Sukang Racun), (B) *Acorus calamus* (komburongou), (C) *Gompherena globosa* L (Bunga Butang), (D) *Phyllanthus niruri* (Mongkorongkoi), (E) *Murraya koenigii* (Tontut Palanuk), (F) *Blumea balsamifera* (Sembung), (G) *Lantana camara* (Tahi Ayam), (H) *Elephantopus Scaber* (Kominci) | 19

LIST OF APPENDIX

Appendix | Page
---|---
7.1 | Questionnaire Forms | 40
7.2 | Example of Letter for Conducting Researcher Project | 41
7.3 | Respondent Information | 42
7.4 | Example of Field Notes | 44
7.5 | Example of Herbarium Specimens | 44
AN ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS USED BY RUNGUS COMMUNITY IN KAMPUNG TERONGKONGAN KUDAT SABAH

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ABSTRACT

Ethnobotanical is the study of human and plants. Ethnobotanical study of medicinal plants was conducted in kampung Terongkongan Kudat Sabah. The study focused on identifying medicinal plants uses, diseases treated, part of the plants used, and method of preparation by Rungus Community in Kudat Sabah. The data was collected using interview and questionnaires. A total of 53 medicinal plant species were collected and identified belong to 35 families for treating 37 human ailments. Four species have been deposit in Herbarium of University Malaysia Sarawak (HUMS). The highest family is Euphorbiaceae with four species. There are Pedilanthus tithymaloides (Bunga Lipan), Macaranga mappa (Longkobungan), Manihot esculenta (Ubi kayu) and Phyllanthus niruri (Dukung Anak). The most uses for treatment were internal uses which are 26 (49.1%). Commonly can treat Acaris lumbricooides diseases and digestive system problem. The most used part of medicinal plants is leaves. Information collected from this study can be used for further study on the phytochemical composition and it validation.

Keyword: Ethnobotanical, Medicinal plants, Ailments, Rungus Community, Kampung Terongkongan Darat Kudat

ABSTRAK


Kata kunci: Etnobotanikal, tumbuhan ubatan, komuniti Rungus, Kampung Terongkongan Darat Kudat
1.0 INTRODUCTION

1.1 Research Background

According to Giovannini (2010) the term Ethnobotany comes from the greek word Ethnos, which means 'people', and Botane which means 'herb', so literally it would be translated as 'the study of people and herbs', which usually is generalized as 'the study of people and plants'. Ethnobotanists can have different trainings and using a wide collection of qualitative and quantitative methods from some discipline according to which particular area of research they focus.

Ethnobotanical study is the study of interaction between plants and people, with a particular emphasis on traditional tribal cultures. Traditional knowledge of medicinal plants and their use by indigenous healers and drug development in the present are not only useful for conservation of cultural tradition and biodiversity but also for community health care and drug development in the local people. The indigenous knowledge on medicinal plants appears when humans started and learned how to use the traditional knowledge on medicinal plants (Mesfin et al., 2013).

Global Information Hub on Integrated Medicine (2015) reported that in Malaysia, the potential of tropical medicinal plants in medication and health improvement cannot be taken for granted. Basically, the roots, leaves or other part of some medicinal plants are known for their medicinal value. Their effectiveness and popularity depend on new research findings but also the usage experience and ethnic belief of the multi-ethnic Malaysia society. The practice of traditional medicine is common among various ethnic groups such as the Malays, Chinese, Indians and aborigines with the knowledge being passed down through the generations. The use of plant materials are traditional medicines either formally or informally is widespread among the local rural communities.
Traditionally medicinal plants are used as powders, decoctions, infusions, tinctures or fluid extracts. These preparations, although they have surprisingly high curative value, are considered raw as per pharmaceutical standards. It has been shown in various studies that herbal products sold in the market are not always pure (Singh, 2006).

The people of Sabah are divided into 32 officially recognised ethnic groups. The largest indigenous ethnic group is Kadazan-Dusun, followed by Bajau, and Murut. Kadazan-Dusun, Bajau, Murut and other smaller groups (Rungus) also have distinct ethnic languages (Sabah Tourist Association, 2015).

According to Herman (2012) the Rungus in the north of Sabah (Kudat area) are possibly the most traditional ethnic group here. They remain remarkably strong in this time of transition, and keep up with an age-old life-style. Their life, as that of most tribes in Borneo, turns around rice: the preparing of the paddy field or the clearance of a hill plot, the growing of rice and looking after it, and finally the harvest. Large coconut and banana groves enable the Rungus to get cash, but in all, their traditional life-style suits them very much and seems to keep them out of trouble and stress.

Herman (2012) also reported that the Rungus seem to have been the last Dusunic immigrants to Sabah to settle here permanently, long before the arrival of the British. They have up to-date conserved much of their cultural heritage. The Rungus are a sub-group of the Kadazan-Dusun, with a distinctive language and a few dialects, architecture, adat (customs), and outfit. Many people still, especially from the elder generation, dress the way they have attired when they were still unaffected by outside influences and it is presumed that most of the other tribes of the Kadazan-Dusun community had similar dresses and attires: simple black sarongs for the women, wide black trousers for the men and beaded accessories.
As mention by Zakaria and Mohd (1992), traditional medicine is a field of science or practice which includes medical and health aspects of the practice of human hereditary. It was inherited orally, in writing, practices and beliefs of a people. This knowledge was divided into two aspects, namely the spiritual aspects and empirical aspects. Malay villages usually there are some traditional medical expert called by the title diviners, healers and midwives. Each has a unique role and important for the life and welfare of the residents.
1.3 Problem Statement

Nowadays, because of most community used modern medicinal plant more than traditional medicinal methods, most of younger generation are did not know about some plant which is involved in healing and have ability to cure disease in traditional ways. There are lacks of documentation plant itself. This caused young generation cannot identify the various types of plants species which are very useful for them to study and learn the whole taxonomy of the plant. Others than that, young generation are exposed to modern technology until they are not even can identify the species characteristics, uses and the important. The plants also need to be conserved. Since the natural habitat of these plants are currently in dangers because of environmental negative factors. This study also conducted to learn about the relationship between Rungus community and the plants used in their daily life. In other hands, the plants identified can be conserved and prevent from extinct. Information collected from Rungus community can help us to practise the best way to use the plants involved.

1.3 Objectives

The objectives of this study are as follows:

I. To identify and describe the medicinal plants species used by Rungus community in Kampung Terongkongan Darat Kudat, Sabah.

II. To document the utilization and preparation of plants for medicinal purposes.
2.0 LITERATURE REVIEW

2.1 Ethnobotanical Studies

Ethno-biology came in focus when the earliest man observed the animals mostly apes and monkeys eating certain plants and found heal his wounds and get rid from pain and suffering (Rana et al., 2014).

Nashriyah et al. (2011) reported that the term ethnobotany was devised in 1895 by a North American botanist, John Harshberger to describe studies of plants used by primitive and aboriginal people. Ethnobotany is a multidisciplinary science which can be defined as the interaction between plants and people. This is where the relationship between plants and human cultures is not limited to the use of plants for food, clothing and shelter but also include their usage in religious ceremonies and for ornamentation health care.

World health organization has estimated 80% people rely on traditional medicines for primary health care in the world. The demand for medicinal plants is increasing in both developing countries for safe, effective and inexpensive indigenous remedies gaining popularity among the people especially in India and China. The tribal knowledge regarding the use of plant species for various purposes depend on the surrounding plants (Rana et al., 2014).

Ong et al., (2012) studies that the status of medicinal plants species are noted in order to anticipate impediments on the future survival of medicinal plants species.

Erasto et al. (2005) reported that in traditional medicine, the number of plants used in the treatment of diseases associated with physiological disorder such as diabetes is limited. These plants species are regarded as precious and highly valued. Considering the rate at which the vegetation is getting depleted in this part of the world, there is the need to
document the precious knowledge of these plants as well as the experience of the traditional healers and herbalist.

Ethnobotanical study on medicinal plants in Sabah was begun in early 1991 by the Sabah Museum and followed by University Kebangsaan Malaysia, Sabah Campus and the Forestry Department of Sabah in 1994 (Erasto et al., 2005).

Samuel et al., (2010) studies that human beings have found remedies within their habitat, and have adopted different strategies depending upon the climatic, phyto-geographic and faunal characteristics, as well as upon the peculiar culture and socio-structural typologies. Most of the information is passed on to the following generations by traditional healers through oral communication and discipleship practices. Moreover, the World Health Organization (WHO) has reported that about 80% of the world population relies on traditional medicine to cure ailments. Plants play a major role in the treatment of diseases and still remain the foremost alternative for a large majority of people.
2.2 Medicinal Plants in Malaysia

Under the favourable influence of its hot, humid climate, Malaysia is endowed with one of the richest plants treasures. Although its lush tropical greenery no longer begins at the edge of the sea and rises to the highest of its mountains, over half of the country is still covered with forest such as mangrove and nipah forest along the coast, peat-swamp forest, limestone-hill forest, lowland, hill and montane forests. Malaysia has been estimated total land area of 81 million acres. It is endowed with glorious natural heritage. It has one of the oldest rainforest in the world. There are over 8000 kinds of flowering plants and innumerable other lesser plant-life (Hoi-sen, 1990).

Nashriyah et al., (2011) reported that yam contributes a lot in economy and culture in some parts of the world, its distribution especially in Malaysia has not been studied in detail. Some species of yam are cultivated for their edible tubers, for medicinal use and for other uses; whereas some other species are grown wild and people are looking for them for other purposes as well.

Zingiberaceae is one of the largest families of the plant kingdom. It is important natural resources that provide many useful products for food, spices, medicines, dyes, perfume and aesthetics to man (Sirirugs, 1999).

According to Hussin et al., (2008), traditional remedies using herbs are now gain acceptance in the Malaysian communities. In order to ensure that it is safe and effective many research has to be undertaken on plants with medicinal uses.

Thousand of plants species in Malaysia, either growing wild in forests or as weeds in our gardens, have been reported to have medicinal or pharmaceutical values. Identification of species is very important to identify accurately for use. A study on the anatomical characteristics of these plants will provide sufficient details of the leaf structure of the plant
species. A description of the plants anatomy would also be very useful as a guide in microscopic analysis of herbal drugs in powdered form (Hussin and Rahman, 2009).

2.3 Rungus Community in Sabah

The native people of Sabah have used and modified plant material for medicine to remedy their ailments. They turn to the forest for their daily medicinal needs and as a source of income. Produce such as medicinal plants, wild vegetables and fruits are gathered and sold in the local weekly markets or also known as Tamu for cash and money (Tulip, 2005).

According to Cris (2011), Rungus is one of the tribes and nations in Sabah, Malaysia. They want to be known by name "Momogun Rungus". Many people still not aware of the existence of Rungus community in Malaysia and their culture. Therefore, Rungus not leave their culture and their way of life of their ancestors. Rungus still live with their unique lifestyle till now. Rungus is referred to the language and it is also regarding about the race and tribes "suku kaum Momogun Rungus".

Traditionally, Rungus Community are live in a longhouse. But, nowadays most of this community live in different type of house either than longhouse. As mention by Murphy (2014), Rungus longhouse (known as vinataang in local language) is made up of 7 to 15 or more family apartments co-joined laterally. Most residents in a longhouse are relatives among themselves. If new family is added, the owner would extend the longhouse at one end. A Rungus village consists of one or more long houses (usually 5 or 6). Long house is common in northern part of Sabah, from Matunggong, Kudat, Kota Marudu to Pitas.
2.4 Management of Medicinal Plants

Developments of country are caused forest or habitat of the plants was destroyed. Conservation of medicinal plants should be done to protect the habitat.

Frankel, Brown and Burdon (1990) reported that the most ancient and widely known function of botanic gardens is to assemble and maintain a diversity of plants species, in the open, in glasshouses and for reference and study, in herbaria. They conduct or facilitate botanical research, especially in plant taxonomy, for which they are traditional centres. Endangered species call for individual attention not because of a recognized use, but because they are deemed to be under threat of imminent extinction.

Many factors are contributing to the loss of plant species, and these threats act synergistically. Foremost among the causes of extinction is conversion or destruction of habitats by humans. Overharvesting of wild plants for medicine and food also endangers species. Several approaches can help save rare plant species and protect habitat for all species generally. First, the global distribution of plant species and their conservation status must be thoroughly and systematically documented (Farnsworth, 2014).
3.0 MATERIALS AND METHODS

3.1 Study Area

An ethnobotanical study of medicinal plants used by Rungus community was conducted in Kampung Terongkongan Darat. It was situated at Kudat Sabah.

Figure 1. Location of the study area

The Terongkongan Village was in the eastern part of Kudat District. It is about 30km from the main town of Kudat. Kudat Peninsula is the northernmost part of Sabah, 170 km from the capital city Kota Kinabalu (Makulim, 2009).

According to Kulip (2005), Sabah formerly known as North Borneo, is located in the northern-most part of Borneo. It is one of the 13 states within Federation of Malaysia and the second largest state with a landmass of approximately 7.4 million hectares. The tropical rain forest in Sabah covers approximately 4.7 million hectares or about 60% of the total area. The climate is marine equatorial with an average temperature of 23-32°C and the annual rainfall is between 250-350cm.
3.2 Interview Session and Botanical Collection

Approximately, there are 32 informant consist of housewives, farmers, and healers from young to adult people and old men whom considered knowledgeable with medicinal plants. Information collected were include about the plant common name, its uses, the part of the plant used, mode of consumption and its preparation processes were chosen. The group age of informants divided into several group. There are midwife or tocologist, elders people, headman of village and educational people (Refer Appendix 7.3). Informal conversations were applied to the informants for them to explain information clearly. Different paper of the questionnaire form was used for each informant in order to record the data systematically without mixing the information given by them.

Field note was used for the plants identification and also to write down any useful information such as details appearance of the plants in the field and the locality of plants by using Global Positioning System (GPS). Photographs of whole or part of the plant will be used to supplement the information included in the field note. Most of the plants that are easily identified were just noted and not collected but some of the identifiable plants also were collected together with any unidentifiable plants for the further examination. The collected plants were numbered, brought back and deposited in the Herbarium of Universiti Malaysia Sarawak (HUMS).

Collection of plants part which is fruit and flower was more advantageous. The additional material such as photos or seeds were numbered with the same collection number as the specimen. Numbers for material preserved in alcohol solution was written in pencil as many inks are soluble in alcohol.
3.3 Identification of Plant collected

Plant were identifying based on their morphology. References were use to identify the plant name. Every characteristic of the plants collected will recorded and mark.

3.4 Preparation of Herbarium Specimens

The specimens were pressed as soon as possible after the collection to avoid from wilting and shrivelling. However, specimens were put in sealed plastic bags first after the collection if it is inconvenient to press immediately. In a while, small quantity of 70% ethyl alcohol was added into the entire bundle of specimens to prevent rapid mould growth. The specimens were pressed flat between sheets of newspapers.

Sheets of thick cardboard were placed between the drying folders which was assist air circulation through the press. Then the specimens was strapped and pressed with metal presser. For the first few days the newspaper were changed daily to fasten the drying process. The drying process can be done with plant dryer of 60° C.

Dried specimens were then undergoing mounting process. The specimen were all over glued on the acid free mounting paper and carefully arranged before it is attached so that it shows all features. Glued specimens were sown to make it paste strongly. The specimen’s description was attached on the bottom right hand corner. Any small pieces of material that collected which may separated from the specimen for example the seed can be placed in small plastic bags and pinned to the sheet. The complete herbarium specimens was deposited at the HUMS.
4.0 RESULTS AND DISCUSSION

4.1 Demographic Information of Respondent

The surveys were conducted around Rungus community in Kampung Terongkongan Darat Kudat to observe the various types of plants were used to cure some diseases in traditional ways itself. The data was collected from 32 respondents. All of the respondents are local people from Kampung Terongkongan Darat Kudat Sabah.

The respondent age is between 24 to 92 years old. From the interview session, seniors generation (40 to 92 years old) have good understanding about traditional medicinal. They have more knowledge and can give more information about the medicinal plants compared with the young generation.

Besides, younger generation (24 to 30 year old) have different knowledge about the medicinal plants. Young generation are mostly exposes to the education up to master degree level. Other than that, information that they give involved addition ways to consume the medicinal plants.
4.2 Botanical Collection of Medicinal Plants Used by Rungus Community in Kampung Terongkongan Kudat Sabah.

A total of four species are collected from the study. Only few samples are successfully collected due to the transportation problem and plants collected are at local area. Besides, some species are damaged and not able to bring for future observed. Others than that, villagers are cultivated the plants and the plants population are not wide.

Species involved is *Stachytarpheta jamaicensis* (Sukang racun), *Chromolena odorata* (kapal tarabang), *Acorus calamus* (komburongou) and *Centella asiatica* (Pegaga). Sampled are collected from Kampung Terongkongan Darat Kudat Sabah. Possible illustration of the plants itself are described and recorded. Photography of the plants specimen is taken to make better understanding and identification. Each of the specimens are illustrated and described. Example of field notes contain number, date, family of species, vernacular name, collector name, locality, habitat and description are included (Refer to appendix 7.4).

Sample FJ 01 *Stachytarpheta jamaicensis* (sukang racun) was collected during sampling. This species are wild species. Mostly, this species can found all the area of the village. According to Leon levy native plant preserve (2015), *Stachytarpheta jamaicensis* is used in the Bahamas to treat issues of circulation (HBP), worms, constipation, the respiratory system, blisters, chills and fevers. Sukang racun can grow up to 1 metre in height. It have blue and purple flower colour. Leaves are arranged oppositely, ovate, elliptic in shape, crenate margin and up to 6.5cm long. Small hairs are covering the stems and leaves.

Sample FJ 02 *Chromolena odorata* (kapal tarabang) also wild species. This species can survive in humid condition. Grow up to 2 metre. It is branches herbs, leaves opposites. In