

Exploration and Identification of Spermatophyta Plants Division that are potentially can be used for Medicine at Evergreen Forest *taman Nasional Baluran* Indonesia

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Abstract— Indonesia is a country that has so many various floras. Nowadays Indonesia has more than 300.000 kinds of floras. More than 8000 kinds of plant belong to medicinal plants. WHO (World Health Organization) has stated about 80% of the population is still dependent on medicinal plants. Based on the Agriculture Ministry of Indonesia, the potential of medicine sales from 2010 to 2015 continues to increase. This is caused by the demand for medicine in 2010 reached 10 trillion rupiah. In 2015 is estimated to reach 20 trillion. Based on the Ministry of Agriculture (2007), traditional medicinal plants are not worth as much as the value of medicinal drugs, but the high value in demand for traditional medicine increases the value of traditional medicine sales from 2 trillion rupiah in 2003 to 7.2 trillion rupiah. The high number of needs is not equal with the production capacity of medicinal plants. This is shown if Indonesia still importing medicinal materials with considerable value whereas in Indonesia has so many medicinal materials especially from tropical forests of Indonesia. The absence of utilization of Indonesia's tropical forests is one of the factors to do the research entitled *Exploration and Identification of Spermatophyte Plants Division That Are Potentially Can Be Used for Medicine at Evergreen Forest Taman Nasional Baluran Indonesia*. This Research conducted by using transect line method along the 100 meters enter the forest from the edge of the forest. The results from the exploration are found 22 types of medicinal plants which are included in 12 families and all of the medicinal plants can be used for medicine. The parts of the plants that can be utilized as a medicine are roots, leaves, flowers and even bark. From the parts of the medicinal plant leaves are the most potential parts for medicine. There are some various ways in utilizing

medicinal plants starting with boiled, chewed, crushed and even mixed with other ingredients.

Keywords—*identification, Medicinal plants, Spermatophyta Division, Evergreen Forest.*

I. INTRODUCTION

Indonesia is a country that has so many various floras. Nowadays Indonesia has more than 300.000 kinds of flora. More than 8000 kinds of plant are medicinal plants and has utilized by the people as a traditional medicine (Rahmawati, 2004). WHO (World Health Organization) has stated about 80% of the population is still dependent on medicinal plants that can be roots, wood, rhizomes or other plant parts. According to the National Socioeconomic Survey in 2001, 57.7% of Indonesians had self-treatment without medical assistance and 31.7% of Indonesians using traditional medicine. And the other used other medicine. The meaning of Medicinal plants is a natural resource that can be used to treat a disease, herbal medicine or cosmetics. Medicinal plants has minimum side effect for our body. It is useful for medical field and it increases the utilization in commercial field. Based on the Ministry of Agriculture of Indonesia, the potential of medicine sales until 2015 reached 20 trillion rupiah in the domestic market and 16 trillion rupiah in export markets. The growth of agroindustry market of medicinal plants in 2010 reached 10 trillion rupiah and increased up to 11 trillion rupiah in 2011 and in 2012 to 12.35 trillion rupiah. This number indicates an increase in the number of demand of medicinal plants from year to year. The demand for this medicinal plant comes from traditional medicinal plants and modern medicine.

Based on LIPI (2003) in the Ministry of Agriculture (2007), although traditional medicine demand is not as high as

modern medicine demand, but the increase of traditional medicinal plants demand in the country has increased in high amount. This can be seen in the data shown in 2003; the demand of traditional medicinal plants from 2 trillion rupiah increase up to 7.2 trillion rupiah in 2010. The high demand of medicinal plants causes the value of trade increasing. It is predicted to continue increasing. It can be a good chance for Indonesia to develop agro-industry in foreign markets. Based on WHO data, 80% of the world's population depends on traditional medicine and 20% of world's population use modern medicine. The modern medicines that marketed in the world made from medicinal plants in the tropics (KLH, 2014).

The high number of needs is not equal with the production capacity of medicinal plants. This is showed if Indonesia still importing medicinal materials from another country with considerable value. The number of budget that has spent on medicine from abroad US \$ 160 million every year LIPI (2003) in the Ministry of Agriculture (2007). Whereas the potential trade from medicinal plants originating from Indonesia's forest areas, especially tropical forests is estimated to reach US \$ 1 trillion (Kompas, 2010). Based on that statement there are still many medicinal plants from the tropical forest area which has many types of flora and vast area that can be utilized to plant medicinal plant and preserving the potential plants as medicine. Therefore, a study conducted in one of Indonesia's tropical forests entitled "Exploration and Identification of Spermatophyte Plants Division That Are Potentially Can Be Use for Medicine at Evergreen Forest Taman Nasional Baluran Indonesia".

II. RESEARCH PROCEDURE

a. Research Design

The design of this research conducted by using transects line. The transect method is a method which is done by drawing the transect line by using the rope and then doing the research on the sample which passed by the transect line. The location of the transect line was located at Hm 81 to Hm 91 located on the road that runs from Batangan-Bekol. The sampling area was divided in to 6 spots 3 spots are on the left of the forest and the other 3 spots are on the right side of the forest. Each spot was chosen randomly. Rope was used as a tool to draw a transect line along 100 meters from the edge of the forest. From these area along 100 meters in transect lines the writers did the observation about Spermatophyte plants which included observation of plant habitus, photographing plant samples,

and plant sampling which used for herbaria production purpose.

b. Plant Sampling

The Spermatophyte plant sampling was done in Evergreen forest Taman Nasional Baluran between Hm 81 to Hm 91 road from Batangan to Bekol. As a method the plants sampling was done by using rope 100-meter in length for transect line starting from the edge of forest into the forest. In that transect line, the observation of Spermatophyte plant was done includes observation of plant habitus and plant sampling for herbarium purposes for further identification. It also photographed samples of plants to see the parts of plants more detail. The Samples are taken during the dry season

c. Plants Identification

The plants identification is done by describing plants from exploration result which includes morphological observations of stem organs, leaves and reproductive apparatus includes flowers and fruits. From the result of description the writer identify the plant by matching with the identification book to obtain the species name of the plant. Plants that have not been identified will send to LIPI Purwodadi - Pasuruan for further identification. After recognizing the name of the species of the plant from exploration result then conducted a study of literature to determine the efficacy of medicine produced from these plants.

d. Herbarium Production

Herbarium production is purposed for preservation of plant samples from Evergreen Forest Baluran Indonesia National Park to avoid damage at the time of identification in LIPI Purwodadi-Pasuruan. There are the steps that should do:

- Taking a plant samples' parts completely from the root until flower. If the plant belongs to tree habitus you can use branch which has leaf and flower as herbarium sample.
- Pack the plant samples by using paper
- Give a label for each plant samples.
- Put in to herbarium press then tied with raffia rope.

III. RESULT AND DISCUSSION

Based on the results of research conducted by researcher at Evergreen Forest Baluran Indonesia National Park that used plot method, the researcher found 22 species of Spermatophyte plants which are listed in the table as follows.

Tabel.1: The list of plants found in Evergreen Forest Baluran Indonesia National Park.

No	Species (1)	Family (2)	Local Name (3)	Benefit (4)
1	<i>Aglaiasp.</i>	Meliaceae	-	Anthelmintic, Can be use as medicine for Malaria, dysentery (Tukiranet <i>al.</i> , 2008). Anticancer (Ahmad <i>et al.</i> , 2010).
2	<i>Aglai argentea</i> Blume.	Meliaceae	Langsat	Digestion, cure colon cancer, fever, malaria and insect bites (Nugroho, 2015)
3	<i>Asystasianemorum</i> Ness.	Achantaceae	Kembanggeni	Treat cough and chest pain (Hidayat, 2015: 202). Treat ulcers and fever (Singh, 2006: 86).
4	<i>Azima sarmentosa</i> Blume.	Salvadoraceae	Sokdoy	Anti scorpion's poison(Uawonggul, 2005).
5	<i>Biden pilosa</i> L.	Asteraceae	Ketul	Treating bladder, kidney, abdominal pain, urinary infection, hepatitis, and rheumatism (Bartolomeet <i>al.</i> , 2013).
6	<i>Capparissp.</i>	Capparidaceae	-	Treating paralysis, rheumatism, abdominal pain, skin diseases, spleen, kidney, liver disease, and prevent scorpion stings (Rivera, 2013).
7	<i>Capparis micracantha</i> DC.	Capparidaceae	kencuran	Treat cancer and tuberculosis(Fernquest, 2012)
8	<i>Clerodendrum inerme</i> (L.)	Lamiaceae	Gambir	Treat poisoning, itching and rheumatism(Van Valkenburg, J.L.C.Het <i>al.</i> , 2015).
9	<i>Cordia oblique</i> Willd.	Boraginaceae	Kendal, nunang	Treating diarrhea, fever, dysentery, headache, stomach pain, cough medicine, and skin diseases such as ringworm (Van Valkenburg, J.L.C.Het <i>al.</i> , 2015).
10	<i>Coripha utan</i> Lam.	Arecaceae	Gebang	Treat diarrhea, cough, dysentery and injuries(Nasution, 2015).
11	<i>Desmodium gangeticum</i> (L.) DC.	Leguminosaceae	Daunpichah	Treat ulcers and burns, treat diarrhea and dysentery, asthma, tuberculosis, and treat flatulence (Singh. 2015).
12	<i>Gloriosasuperba</i> L.	Colchicaceae	Kembangsungsang	Treat gout, diuretics, rheumatism (Winarnoet <i>al.</i> , 2010). To treat skin diseases, skin, cardiovascular.
13	<i>Kleinhovia hospita</i> Linn.	Sterculiaceae	Timanga	Treat liver cancer and decrease cholesterol (Imaniyah, 2014).
14	<i>Lantana camara</i> L.	Verbenaceae	tembelean	Treating asthma, gonorrhoea, ulcers, deman, tuberculosis, rheumatism, and swelling(Yuliani, 2013).
15	<i>Neonauclea calycina</i>	Rubiaceae	Anggerit	Treat bone fractures and kidney

	Merr.			disease (Silalahi, 2015).
16	<i>Randiadumetorum</i> Lam.	Rubiaceae	Madana	Heals wounds, tumors, worms, skin diseases, and antibacterial activity (Ghoshet <i>al.</i> , 1983).
17	<i>Randiaspinosa</i> (Thunb.)	Rubiaceae	Timuntahil	Treating diarrheal diseases, inflammation, tumors, ulcers, dysentery, and stomach (Singh, 2010)
18	<i>Schleicheraoleosa</i> (Lour.)	Sapindaceae	Kesambi	Treat eczema, scabies, cancers and inflammation of the ear(Okan, 2015).
19	<i>Streblus asper</i> (Lour.)	Moraceae	Serut	Treat fever, dysentery, toothache, stomachache, and urinary disorders (Taweechaisupapong, 2015)
20	<i>Strychnos lucida</i> Lam.	Leguminaceae	Bidaralaut	Treat rheumatism, stomachache, ulcers, ringworm, inflammation of the skin purulent, overcoming blood sugar and anti-inflammatory (Gusmailina, 2015).
21	<i>Synedrellanudiflora</i> (Linn.) Gaertn.	Asteraceae	Legetan	Heals bleeding wounds, headache, earache, stomachache, and rheumatism (Sumiet <i>al.</i> , 2011).
22	<i>Thunbergiafragrans</i> Roxb.	Achantaceae	White lady	Treating external wounds (Samuel <i>et al.</i> , 2010).

The plants which were found consisted of 22 species and 15 genus that are Meliaceae, *Salvadoraceae*, *Capparidaceae*, *Rubiaceae*, *Lamiaceae*, *Boraginaceae*, *Arecaceae*, *Leguminosaceae*, *Sapindaceae*, *Moraceae*, *Sterculiaceae*, *Verbenaceae*, *Achantaceae*, *Asteraceae*, *Cholcicaceae*. All species which obtained belongs to trees, there are rarely found plants which belong to shrubs. This is because the Evergreen Forest is dominated by trees. when sampling time the weather is so hot and dry but the plants is still survive in extreme environments. It is about 22 plants found that belong to herbal medicine because each plants content a materials that can cure or prevent disease. The medicinal material can be derived from its leaves, roots, flowers and even bark for example *Aglaiaargentea* plant whose bark is used to treat from insect bites. From all of the plant samples the parts which are the most commonly use for medicinal materials are leaves. There are some various ways in utilizing medicinal plantssuch as boiled, chewed, crushed and even mixed with other ingredientsso there is a mixture between the two materials and it is made the benefits more complementary.

IV. CONCLUSION

1. The plants which were found consisted of 22 species and 15 genus that are Meliaceae, *Salvadoraceae*, *Capparidaceae*, *Rubiaceae*, *Lamiaceae*, *Boraginaceae*, *Arecaceae*, *Leguminosaceae*, *Sapindaceae*, *Moraceae*, *Sterculiaceae*, *Verbenaceae*, *Achantaceae*, *Asteraceae*, *Cholcicaceae*.
2. The medicinal material can be derived from its leaves, roots, flowers and even bark.
3. From all of the plant samples the parts which are the most commonly use for medicinal materials are leaves. There are some various ways in utilizing medicinal plantssuch as boiled, chewed, crushed and even mixed with other ingredients.

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