

## THE ROLE OF LOCAL KNOWLEDGE IN DEVELOPING INDIGENOUS INDONESIAN MEDICINE

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### ABSTRAK

Peranan pengetahuan lokal dapat memberikan informasi tentang tumbuhan obat untuk mengobati penyakit, serta penelusuran adanya hubungan antara komponen bio-aktif yang dapat menyembuhkan penyakit tersebut. Pengetahuan lokal ini sangat beragam karena Indonesia mempunyai ± 370 etnis yang bermukim tersebar di seluruh kawasan hutan/kepulauan Indonesia yang luasnya 119,7 juta hektar. Saat ini baru ditemukan ± 1300 jenis tumbuhan obat yang pemanfaatannya sesuai/mengikuti pengetahuan lokal dari masing-masing etnis. Adanya “biological prospecting” yang berkembang di dunia barat dapat mendorong industri bioprospeksi terutama industri farmasi untuk menghasilkan produk obat asli Indonesia yang berdasarkan pengetahuan lokal etnis setempat dan tumbuhan obat dari kawasan hutan Indonesia. Serta mengikuti Kebijakan Nasional yang mengatur akses ke Sumber Daya Alam atau Biologi Asli (Indigenous).

Kata kunci : Pengetahuan lokal, etnis, tumbuhan obat, hutan, etnobotani, bioprospeksi.

### INTRODUCTION

In order to establish development in health field an effort to maintain people's health by an approach “health paradigm” i.e. maintain health and sustain and promote people's health that engaged comprehensively and integrated and affordable by all society strata. One of the efforts is by using Indonesian indigenous medicine in lieu with slogan “Back to Nature Use Indonesian indigenous medicine.” Along with all this, a socialization of Indonesian indigenous medicine is needed by campaigning a sustainable tropic forest in Indonesia. Indonesian forest is the warehouse or natural factory of indigenous medicine / traditional also people or ethnic that live in and around the forest who have the local knowledge in using natural / traditional ingredients for medicinal purposes. The knowledge of medicinal plants, starting from the type of the plants, parts being used, mixing methods, up to the kind of disease that may be cured is a part of local knowledge treasure from each ethnic / local people.

### MATERIAL AND METHOD

This research is conducted by directly observing on several kinds of medicinal plants based on local knowledge that already has been applied by certain ethnic/local people. And the appliance of these medicinal plants has been proven its worthiness. Then a reference was searched to support its usage and also traced its potential to be developed (biological prospecting).

### RESULT AND DISCUSSION

The people of the world trends “Back to Nature” along with data indicates ± 80% of the people of the world depend on traditional medicine / alternative which raw materials originates from plants (WHO, IUCN, WWF 1993), is a great opportunity for Indonesia especially agro-pharmacy medicinal plants that originated from the forest. Generally, from the medicinal plants, the part being used is its bio active components. A report from the United States, around 25% medicinal mixture consisted of plants (Farnsworth & Soejarto 1985). Even in western countries many plant extract applied as medicine and its usage based on local knowledge of certain ethnic / local people. These indicate the importance of role of the medicinal plants for the development of people's health in every country in the world.

The process to make medicine which ingredients consisted from nature / plants took a long time and very expensive. For example medical factory “Merck” for every 10.000 plant extract being evaluated and tested in a “bio-assay” method, 20 extract passed and then selected again by a test using laboratorium animal. From this selection there are only ± 10 extract that being re-tested in human being and only one actually selected and qualified to be proposed to “Food and Drug Administration” (FDA) in United States before being sold as drug . As for total cost spent by Merck amounted to US\$ 231 Billion in time span of 12 years (Farnsworth 1994).

According to Zuhud in Report of Medical biota expedition (1998), at this time in Indonesian forest area

there are around 1300 plant types that have medicinal ingredients. Based on the potency, Indonesian indigenous medicine may be developed widely. Indonesia has also 370 ethnic / original inhabitants that live spreading in the forest area. These Ethnic usually have local knowledge and also traditional / simple in using medicinal plants to cure certain disease. Interrelation of variety of forest plants with local knowledge on medicine from certain or ethnics that live around forest area is a multidisciplinary science called ethnopharmacology or ethnophytomedica. And ethnopharmacology is a part of ethnobotany.

According to Balick (1994), ethnobotany / ethnopharmacology is the leading edge in searching for bio active components that exists in plants. Relation between pharmacy research with the forest as a field of plant conservation and also as natural resources, ethnic those live in the forest area. And this ethnic has local knowledge or information regarding its usage in a simple / traditional way. Approach using ethnobotany / ethnopharmacology methods is the foundation to observe and develop local knowledge. Furthermore it may gain information of practical medic of certain local people/ethnic. These research and observation may reveal important information in its usage and inquiring the existence of interrelation of bio active components and ethnopharmacology data that has been gained in "bio-assay" tests and may be conducted by "in-vitro" or "in-vivo". Kardono and Isauri (1992), explained that ethnobotany / ethnopharmacology of Indonesian plants closely related and matched with bio active components being used for medicine / heal for the disease. As an example "sambiloto" (*Andrographis paniculata* Ness.) medicinal plant in local traditional usage applied to heal abdominal disease and anti diarrhea. Ethnopharmacology information in local knowledge may be used to confirm the inquiry the mixture of Indonesian indigenous medicine. This information may also be used as indicators of existence of specific bio active components in the medicinal plant.

Observation result in the field indicates that local knowledge of the local people or certain ethnics known several kinds of plants Indonesian tropic forest medicine that are very popular in medicinal purposes. Some of the plants are : *Alstonia scholaris* R. Br. (pulai) from Apocynaceae family, *Eurycoma longifolia* Jack. (pasak bumi) Simaroubaceae family. Both kinds of forest plants being used by 15 ethnics out of 45 ethnics observed to cure malaria disease. According to Chan *et al.* (1986), "pasak bumi" is wild plants that widely found in Sumatera and Kalimantan forests that contains bio active compound 'eurycomonone' that is effective to cure malaria disease. This is very supportive the local and ethnic knowledge that pasak bumi is appropriate to cure malaria disease. Other kinds of forest medicinal plants are *Arcangelisia flava* (L.) Merr. (akar kuning) and *Fibraura chloroleuca* Miers. (akar kunyit). These two plants belong to Menispermaceae family

and also applied by 7 ethnics (also out of 45 ethnics) to cure yellow fever. Siwon *et al.* (1981), describes that "akar kunyit" has bio active compound "berberin" that function as anti bacteria and anti virus. The yellow fever known in the knowledge of local people / ethnic, currently known as hepatitis disease that caused by certain virus. Therefore akar kunyit (*Fibraura chloroleuca* Miers) is safe and appropriate to be applied as cure for yellow fever / hepatitis. The plant *Alstonia scholaris* R. Br. (pulai) being used to cure malaria and already applied by 15 ethnics and also *Arcangelisia flava* (L.) Merr. (akar kuning) has already being used to cure yellow disease by 7 ethnics since long time ago and inherited ever since. Usage of pulai and akar kuning traditionally for medicinal purposes and according to local knowledge may be applied as clinic test on the ethnics. Therefore this local knowledge may be used to develop pulai to cure malaria, akar kuning to cure yellow fever / hepatitis and other medicinal plants that originated from the forest may be developed as Indonesian indigenous medicine.

Indonesia is one of the country that own largest tropical forest in the world. As large as 119.7 million hectare. This Indonesian tropical forest placed third after Brazil and Zaire. Because of the huge size of the forest, Indonesia is also known as country who have many variety of plants (including medicinal plants). The existence of ethnics that permanently live in the forest with their local knowledge by using plants in self-medication efforts. Generally tropical forest in Indonesia has high biodiversities (forest, medicinal plants, ethnics and local knowledge) therefore its sustainability must be maintained.

In the last few years an effort to use forest resources non – wood has developed especially medicinal plants with appealing prospect value. The effort known as "biological prospecting". Bio prospecting is an effort that refer to usage of biology resources that has high value to be developed in the future especially for medicinal purpose. Pharmacy industrial world is the explorer for new industrial development based on local knowledge and the raw material / medicinal plant originated from forest to produce Indonesian indigenous medicine.

The forest as the source of medicinal plants being used to fight various disease, to control pests and assist the development of industrial process that is environmental friendly. The progress of this industry very much depends on the variety of tropical forest medicinal plants or variety of world plants. Therefore the people of the world are now highly regarded the importance of natural resources, especially medicinal plants that had high value in self medicinal efforts as a center of knowledge that is important to the existence of human being. By Bioprospecting, the big pharmacy industrial aggressively exploring tropical forest area to obtain non-wood plants / medicinal plants / biology materials that have possibility of high value commercially

in the future. Enthusiasm of commercial pharmacy industry on the bioprospecting and also the promising profit. This is also encourage by there is no clear policy either in national or international level to arrange bioprospecting. Since the bioprospecting industry grows very fast lately, many countries realize the importance of national policy that arranges access to natural resources or indigenous biology. Developing countries including Indonesia as country that own high sources of various biology/plants, currently is in the process to adopt a policy that guarantee national interest. This national policy is to ensure that national interest is protected in the long time.

### CONCLUSION

Efforts to use Indonesian indigenous medicine must be socialized by campaigning the sustainability of Indonesian Tropical Forests.

Indonesian Tropical forest as wide as 119.7 million hectare, there are  $\pm$  1300 kinds of medicinal plants and around 370 ethnics that live in the area. These ethnics have local knowledge in using medicinal plants to cure disease.

Ethnobotany / ethnopharmacology approach is the foundation to observe and develop local knowledge. This observation may reveal information in its usage and researching the relation between bioactive components in "bio-assay" test.

In the last few years an effort to use forest non-wood resources has developed especially medicinal plants with appealing prospect value which is called "biological prospecting". Pharmacy industry may have a role to develop new industry based on local knowledge and its raw materials / medicinal plants originated from the forest to produce Indonesian indigenous medicine.

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