

RESEARCH AND DEVELOPMENT ON INDONESIAN TRADITIONAL MEDICINES : A COMPARISON TO MALAYSIA*

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ABSTRACT

Research and development on Indonesian traditional medicines has been performed by researchers from universities, research institutes and traditional medicines industries. All aspects of research on traditional medicines have been conducted starting from cultivation, ethnopharmacology, utilization, isolation and identification of active constituents, efficacy evaluation, pharmacology, safety, standardization, formulation, and clinical evaluation. Policy on Indonesian traditional medicines has also been set up. Many factors give influences on the development of traditional medicines, such as, research quality in a holistic approach, research integration one to the other, the attitude of individual researcher, scientific community etc. Indonesian traditional medicines are not only belong to the Indonesians. Many of Indonesian traditional plant medicines are part of Flora Malesiana species, which grow in Malay Peninsula, or imported plants from India, China and Brasilia. Indonesian traditional medicines are possibly to be developed by Malaysian researchers, a country that has set up her mission to be a world center in conservation, research and utilization of tropical biodiversity by the year 2020. Indonesian Traditional Medicines National Working Group (Pokjanas TOI) need to do a reposition and make a new strategy to be able to compete with their colleagues in Malaysia. Some policies and activities on development of traditional medicines in Malaysia will be discussed as an input for Indonesian research purposes.

I. INTRODUCTION

The use of plant remedies in the treatment of ailments and diseases is often referred to as herbal medicines. The World Health Organization has defined Herbal Medicine as "Finish labeled medicinal products that contain as active ingredients aerial and underground parts of plants or other plant material or combination thereof, whether in the crude form or as plant pre-paration". Therefore, herbal medicine is one of the basic of traditional medicine.

Indonesia is an archipelago, with a total of 17,508 islands, stretching over two continents, Asia and Australia. With regard to species biodiversity which consists of biological richness of plants, animals and microbes, Indonesia is known as a country with a "mega diversity" of biological species as well as the "mega center" for world biodiversity. Of the world's species diversity, 10 % of flowering plant species, 12% of mammals, 16% of reptiles and amphibians,

17% of birds, 25 % of fish, and 15% of insects exist in Indonesia, although it occupies only 1.32% of the world's land mass (1, 2, 3). This biological richness, therefore, should be explored and utilized wisely for the benefit of Indonesians and human welfare.

Despite the wide range of Indonesian biodiversity, only about 6,000 of its plant species, 1,000 animals, and *ca* 100 micro-organisms have been recognized and utilized economically and/or therapeutically by the Indonesian people (1, 3). Meanwhile, the destruction of natural ecosystems, which alters the habitats of animals, plants and microbes occur very rapidly. The condition is worse with the opening of forest areas for transmigration, farming and with forest fire. a large number of species (plants, animals, and microbes) have been depleted from their natural habitats in forests, rivers, lakes and coastal areas. Among the species so lost are undocumented novel entities whose identities and potential benefits are unknown. In this

situation, integrated concepts in forest plant conservation for their sustainable utilization is required (3, 4, 5, 6, 7).

The process of forest development is dynamic due to various disturbances, caused by either natural disturbances or human disturbances. It is the reason why the plant collections were conducted inside 1 hectare plots in the natural forest reserve area. It is expected that the effect of those disturbances on forest development seems to be very little so that the bioactive potential of their biodiversity richness can be monitored and conserve from time to time (5, 8, 9).

By trial-and-error people learned how to distinguish useful plants with beneficial effects from those which were toxic or non-active, and which plant combinations or plant processing methods had to be used to gain optimal results. Throughout centuries, traditional medicine evolved all over the world, dependent on the local flora (fauna), culture and religion. Nowadays, it is generally recognized that besides more rational approaches, also this empirical knowledge substantially may contribute to the public field studies, and documentation of ethnopharmacological and ethnomedical data, basic and clinical research is urgently needed to establish therapeutic effects and its safety that are claimed in traditional medicines. Isolation, and identification of the bioactive plant constituents will provide a basis for the standardization of plant preparations and their quality control. Detailed studies on the interaction of active compounds with living systems will deepen our insight into the interaction of bioactive compounds with living systems will deepen our the insight into the cellular and molecular biological processes involved (10, 11).

Different from Indonesia, in Malaysia, the use of herbal medicine are being practiced by three ethnic groups, the Malays, Chinese and the Indians. Traditional Malay practices originated mainly from Malay-Archipelago, and have been influenced by Indians and Arabic practices. It has been practiced especially by the Malays. Chinese traditional system of medicine is believed to have begun with the coming of the Chinese

from Mainland China, to work in the tin mines who brought herbs medicines and later on other forms of treatment such as acupuncture. The Indian traditional medicine system namely Siddha, Ayurveda and Unani. The Siddha and Ayurveda system originated from India (12).

II. AN OVERVIEW OF EFFORTS ON RE-SEARCH AND DEVELOPMENT IN MALAYSIAN HERBAL MEDICINE TOWARDS COMMERCIALIZATION OF HERBAL PREPARATION (12).

Malaysia is blessed with natural resources rich in medicinal plants. A total of 1,230 floral species have been recorded as plants used in traditional medicine in Malaysia (13). The Malaysian herbal market is valued at about RM 2 billion and is growing at a rate of 20% annually. In order to compete globally, Malaysia is bound to increase the local participation to 15% by 2005 and 48% by 2010. With abundance of natural resources that are available to tapped from, the Malaysian Government increase efforts to explore the possibilities of using natural resources for something more useful and profitable. This necessitates Malaysia to steps efforts to promote the development of the Malaysian Herbal Industry.

Under the 7th Malaysia Plan (1996-2000), the development of the traditional medicine industry is given high priority. The research and development on medicinal plants for herbal and drug development (bio-pharmaceuticals) and related research (Bio-prospecting and phyto-chemistry) were the activities to be focus. The Forest Research Institute Malaysia (FRIM) was given the mandate by the cabinets to coordinate this task. Efforts were initiated with the establishment of the National Committee on Medicinal Plants in January 1995. This committee represented by the various academic institutions, research institutes, government agencies including Ministry of Health, and traditional medicine industries representatives. During the National Convention on Medicinal Plants, held in October 1995, in FRIM, several

strategies were identified to steer the development of the medicinal plant industry. One of the steps to be focus was the Research and Development of the medicinal plants products towards safe herbal preparation and eventually to drug development. The Herbal Medicine Research Center at the Institute for Medical Research was given the task to research on the efficacy and safety of the medicinal plant products.

The Herbal Medicine Research Center at the Institute for Medical Research was set up in 1999, to focus research on Herbal medicine. The Center's main research focus is on the efficacy and safety of herbal medicinal as claimed. The set up of the Center was initiated by several needs: 1. In line with traditional and complementary medicine policy, Ministry of Health has entrusted the institute with the role of being the center of excellence in herbal medicine; 2. International Advisory panel for agro-industry (Coordinated by the Ministry of Agriculture) has the vision of making Malaysia the world class producer for herbal medicine, therefore, the institute has a role in that vision; 3. The need to have a center for herbal medicine research responsible for setting directions, coordinating and integrating research and development in various fields.

In 1998, Memorandum of Understanding between the Ministry of Health and the WHO/TDR for Drug Development Project for malaria was signed. Institute for Medical Research staff were trained in new technologies in the medium throughput screening system for selection of plant bioactive components for anti malaria properties and good clinical practices guidelines. The technologies acquired were implemented and from the basis for anti malaria screening. Other bioassay procedures were then implemented. The research expected into many other fields, such as, Immuno-modulatory studies and some selected diseases including investigation of effects of plant products on cancer and diabetes.

The critical importance to ensure to insure the success of herbal medicines now and in the future are the safety, efficacy and the quality of the herbal medicine. The importance of research and development in medicinal plants/herbal medicines in short term objectives are: 1. To ensure the safety of the product. 2. To provide scientific data that support the claim; and in long term objectives are: 1. to support the herbal industry. 2. to produce new drug that originate from local plants and 3. to ensure the continues supply of quality raw materials/plants.

In herbal medicine industry, the Malaysian government mission is to place Malaysia a world center in conservation, research and utilization of tropical diversity by the year 2020. Herbal medicine has been name as one of the product that could be developed from the Malaysian bio-resources. Many agencies, government institutes, pharmaceutical industries and private bodies plays important roles towards this mission. Towards promotion into the herbal industries, in 1998, Malaysian Industry-Government Group for High Technology (MIGHT) Interest Group (MIG) in herbal products was set up. The role of MIG is to play a constructive role in bringing together expertise and encouraging commitment from both the public and private sectors involve in the herbal products to promote the industry to a greater height. Through MIG members the National Herbal Products Blueprint was produced. It is a document that projects new strategies, plan and activities for the national herbal industry. One of the recommendation of the blueprint was the establishment of the Malaysian Herbal Cooperation.

The Malaysian Industrial Development (MIDA) is the Malaysian government's principle agency for the promotion and coordination of industrial development in Malaysia. MIDA assists potential investors with information regarding government policies and procedures, tax incentives, infra-structures, facilities and potential joint venture partners. MIDA also provides

Incentives for the Biotechnology Industry such as Incentives for High Technology Industries, strategic projects, prepackaged incentives and incentives for research and development. Malaysia has over 100 pharmaceutical/nutraceutical manufacturers, producing a wide variety of products, ranging from modern dosage forms to herbal and nutraceutical products. However, few are engaged in research and development to develop new products that are competitive in the global market.

With the input from multi-discipline agencies, the herbal Industries in Malaysia will flourish more and will be in the global market at par with the other Industries.

III. RECOMMENDATION FOR NATIONAL WORKING GROUP ON INDONESIAN TRADITIONAL MEDICINES (POKJANAS TOI)

Several policies and strategies have been set up to develop Indonesian traditional medicines towards commercialization and preparation. Intense research and development activities have been performed by researchers from universities, research institutes, traditional medicines industries, and many other private sectors, that eventually lead to the development of drug discovery. To be able to compete with the research progress in Malaysia, the Indonesian researchers need strong commitments, funding, efforts and coordination that focusing its research priorities. Pokjanas TOI needs to do reposition in conducting its activities. Each research direction need to be selected based on the national attractiveness, potential benefits, ability to capture, and research capacity.

IV. REFERENCES

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