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Biodiversity, traditional medicine and sustainable use of indigenous medicinal plants in Indonesia



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Message from the Editor's Desk

It's the month of Indonesia's Independence Day. Sparked with the spirit, we put the medicinal herbs in the "Export Gallery" section. Indonesia has the world's largest biodiversity with around 140 million hectares of rainforest. Therefore, nature is deeply rooted in the life of the people culturally, socially and economically. Traditional herbal medicine derived from leaves, fruits, roots, seeds, flowers or tree barks, has been widely used since ancient times. The market for medicinal herb is still promising, as long as we keep our commitment and hard work into it. Both processed and natural medicinal herbs are still a prospective market in Indonesia as an agricultural country. The domestic industries of medicinal herb processing are also growing from time to time.

Next to it, on the "Export Brand" section, we put PT Daya Manunggal whose products use "Damatex" brand name, which is a short for company's name: (DAYA MANUNGGAL TEXTile). It first exported its fabric to Singapore, Middle East among others Iraq, where at that time it won 15 million yard contract. Then, exports to the European countries and Australia etc. followed. In addition, companies like Marubeni, Mitsui, Mc Spancer, Total, Itochi and so on also imported textile produced by PT Daya Manunggal. The founding companies are proud that the products made meet the quality standard of which is equal to that of the Japanese companies make. By attaching "made in Indonesia" on every products, PT Daya Manunggal's products are known for DAMATE Indonesia brand overseas.

PT Adimulia Sarimas Industry, as a soap manufacturing company whose factory is located in Medan-North Sumatera, is featured in "Indonesia at Your Home" section. At the local market, two of Sarimas soap products, SONOMA and JOI have won quality acknowledgement from Ministry of Health of Republic of Indonesia. The products are evenly distributed in the domestic market. On the other hand, Sarimas has also exported to Asia Pacific and Africa region since 2004. The acceptance level of those markets is growing, which has shown the market penetration of Sarimas in those countries. It shows that the chances of expanding will be growing in the future.

In short, we can say that history has given a great contribution to the development of the future! Diversities can be used to strengthen the nations. Happy readings!

Biodiversity, traditional medicine and sustainable use of indigenous medicinal plants in Indonesia



"Jamu, Madame, Sir!" That's how a slim, young woman carrying a heavy basketful of bottles tied up on her back greets her clients from door to door at a Jakarta neighborhood every morning. The lady, wearing the Javanese traditional dress called kebaya and batik sarong, is selling the traditional Indonesian herbal medicine known as jamu.

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nature is deeply rooted in the life of the people culturally, socially and economically. Traditional herbal medicine derived from leaves, fruits, roots, seeds, flowers or tree barks, has been widely used since ancient times.

Thousands of jamu ladies roam Indonesia's narrow streets and kampongs (hamlets), offering a glass of freshly prepared herbal medicine, which is usually mixed with raw egg and honey. In addition to the 'mobile' jamu ladies, there are also many jamu

stalls almost everywhere.

In addition to homemade fresh jamu, the jamu vendors also offer herbal medicine produced by jamu manufacturers. At present, one could easily buy ready-made jamu packed in powder form, as pills, capsules, tonics, oil and ointments. Jamu is used to treat a wide variety of ailments ranging from fatigue and headache to malaria. It also supplies the body with vitamin C, cleanses the blood, keeps the body in good shape, and makes the skin smooth.

Jamu consumers come from every class of society, from the poor to the rich, those who live in villages or those who live in the big cities. Indonesians like to consume jamu due to its availability and comparatively cheap price. Jamu is usually consumed in liquid form and in some cases is applied externally such as on the skin or forehead. The traditional methods of making jamu such as by boiling the prepared herbal ingredients still prevail in the country. The popular traditional tools of making jamu by using a clay pot and grater are still available in many families.

As part of the national family welfare program, each neighborhood has been encouraged to have a medicinal plants garden to supply residents who need to treat their family members. The garden is also



aimed at preserving the medicinal plants. The traditional knowledge of Jamu making is also passed to the younger generations.

Among common herbs used in jamu prescriptions are ginger (*Zingiber officinale*), wild ginger (*Curcuma caudata*), turmeric (*Curcuma domestica*), greater galangale (*Kaempferia galanga*), kumis kucing (*Orthosiphon aristatus*), bengle (*Zingiber bevilianum*), secang (*Caesalpinia sappan*), brotowali (*Tiospora rumpii*), calamondin (*Citrus aurantifolia*), cinnamon (*Cinnamomum zeylanicum*), and alang-alang (*Gramineae*).

Traditional medicine may be seen as a product of the twofold wealth of Indonesia: its biodiversity and its cultural diversity. With a view to maintaining this diversity and ensuring the long-term future of the country's health care system, Indonesia needs to devise a program for the sustainable use of medicinal plants. The authors have identified seven urgent needs.

Indonesia is an archipelago comprising some 17,000 islands. Although it covers only 1.3% of the earth's surface, it contains almost 15% of all higher plants, as well as

a significant share of the world's animal diversity. Indonesia is one of the world's top two mega-centers of biodiversity (alongside Brazil). It is also a country of enormous cultural diversity. Among its 210 million inhabitants, there are no fewer than 336 different cultures, speaking over 250 languages. The fact that the country is an archipelago has serious implications to the country's politics, economy and infrastructure. Indonesian governments and non-governmental organizations (NGOs) foster the use of the rich natural resources that are to be found all over the country, in an effort to make it less dependent on imports. For purposes of this article we will focus on the Indonesian flora, specifically those plants which have therapeutic properties. The Indonesian Country Study on Biodiversity (ICSBD, 1993) puts the number of species of flowering plants in Indonesia at between 25,000 and 30,000. Some 10% of the total flora of Indonesia is thought to have medicinal value. Some 40 million Indonesians depend directly on biodiversity, and Indonesian communities make use of around 6,000 plant species, 1,000 animal species and 100 microbe

species on the day to day basis (State Ministry for Environment 1997; Government of the Republic of Indonesia 1997). Many plants which are useful for medicinal purposes have been imported, together with details of their use. In some cases this has led to the development of new uses, while formerly unknown species are regularly integrated into traditional Indonesian medical systems.

Traditional medicine in Indonesia

Not surprisingly, there are many different varieties of traditional medicine in Indonesia, all associated to a greater or lesser degree with the different ethnic groups and the historical processes that have shaped this archipelagic nation. Among the various patterns are mixtures of older elements (from hunter-gatherer stages) and knowledge gained during the different historical periods. They display not only the influence of Hinduism, Buddhism and Islam, but also that of the colonial era and the period after independence. The oldest and most widespread system, and one of which is best understood, is the jamu system of herbal medicine. It originated in Java, and probably dates back to the construction of the world-famous Borobudur in the late eighth and early ninth centuries. In the course of time, jamu spread not only to the whole island of Java and to neighboring Bali, but also to many of the other islands. This dissemination was greatly furthered by the policy of resettlement, which dates back to the period of Dutch colonial rule. Under this policy, which was known as 'colonization', 200,000 people were moved away from rural Java during the period 1905-1940. After independence in 1945 the scheme was continued, as part of the Indonesian government's Transmigration Program. Between 1950 and 1994, upwards of 7 million people left Java and Bali as participants of transmigration, some 7% of them with government support (Department of Information, 1996). Today, jamu plays a decisive

role in the national development; it is an important component of national health care and plays a major role in the economy of the rural areas. As a result of the continuous exchange of information between various cultural groups, traditional systems of medicine are not static but dynamic, regularly incorporating new knowledge and uses. While all the various systems are based on more or less the same plant material, users are limited by what is available in their own locality and the existing knowledge with regard to their use. This has resulted in an interesting series of often complex patterns of use.

Utilization patterns

We will now take a look at few examples, which illustrate the complex utilization patterns of medicinal plants in Indonesia. As a rule, people use specific plant species to cure specific diseases. In Kampung Gumpang, Aceh (North Sumatra), the Acehnese use puding

hitam (*Graptophyllum* sp.) to cure eye diseases (sakit mata); besi-besi (*Justicia gendarussa* Burm.f., syn. *Gendarussa vulgaris* Nees.) for stomachache; and rutih or geceh, devil's tree, dita bark tree (*Alstonia scholaris* (L.) R.Br.) for malaria. However, a particular plant species may also be utilized to cure different diseases within different ethnic communities in different regions of the country. This is true, for example, of alang-alang, lalang, cotton grass (*Imperata cylindrica* (L.) Beauv.), one of the most widespread grass species in Indonesia, which is found as high as 3,000 m above sea level. Alang-alang grows wild in dry forest, open fields and dry land. The roots of this species are used to cure high blood pressure, fever, cough, and hepatitis. Another example is temu lawak (*Curcuma xanthorrhiza* Roxb.), used for a wide variety of different diseases. A third possibility is that different ethnic groups in different geographic areas use different plant species for the same disease. For

malaria, people in Aceh use rutih or geceh, while in Bengkulu they use medang (*Beilschmiedia madang* Blume), and in East Timor idara laut (*Strychnos lucida* R.Br.). This pattern reflects the geographic variability within the same area (Aceh and Bengkulu are both in Sumatra) and on different islands within Indonesia (Sumatra/Timor). And finally, people also make use of plant mixtures. For instance, people from Seberida, Province Riau (Sumatra) treat large wounds with a mixture of the bark of loban, wild pepper (*Vitex trifolia* L.), dukuh, langsung (*Lansium domesticum* Correa) and rambutan, rambutan (*Nephelium lappaceum* L.). It will be clear that the greater the geographic distance, the more pronounced the differences will be between the systems of traditional medicines used by the respective communities. However, in some cases different ethnic communities living close to each other maintain distinct traditions and different healing systems. The most obvious example is



the case of 'modern' Indonesian ethnic groups such as the Sundanese or Javanese living next to 'older' ethnic groups such as the Kubu and Talang Mamak tribes of Sumatra, the Penan of Kalimantan, the Asmat of Irian Jaya, and the Baduy of West Java. But even ethnic groups like the Sundanese of West Java and the Javanese of Central Java use different methods of healing and disease prevention. For liver infections, for instance, the Sundanese eat



d o m e s t i c a,

turmeric, as *lalab* (salad, fresh vegetable), while the Javanese use boiled dried turmeric to treat the same ailment.

Plants used

Considerable scientific researches have been devoted to the plants used by indigenous peoples in Indonesia, ranging from Heyne's classical publication to the recent compilation of the medicinal herbs of Indonesia (P.T. Eisai, 1995). Scientists have also repeatedly expressed their concern that many medicinal plants are already endangered and others are likely to become so in the near future. There are listed 29 species of medicinal plants, grouping them according to the IUCN criteria. The majority of the species were considered rare, others were classified as 'status unknown', vulnerable, or endangered. It is compiled a list of 1,260 species of medicinal plants, which originate in Indonesian forests. On the basis of an analysis of study together with our own observations, a number of conclusions can be drawn. First, the majority of rare medicinal plants are trees. Second, most of the

rare plants are rain forest species. Third, the potentially endangered species include *jamu* plants which are still collected from the wild: of the 55 most important species of plants used for *jamu*, about 25% are still collected from the forests. Fourth, highly regarded species like *purwotceng* (*Pimpinella pruatjan*), which is used as an aphrodisiac, have already become extremely rare or even locally extinct due to over-harvesting of wild populations. Given the commercialization of the *jamu* system, the importance of traditional herbal medicine in Indonesia, and its role as an export commodity, ways must be found to maintain the biological diversity of medicinal plants in Indonesia, while ensuring that the peoples of Indonesia will still be able to make use of their traditional medicines.

Sustainable use

Traditional medicine in Indonesia still relies to a large extent on plant materials taken from the wild. Most of these plants are species typical of more or less undisturbed forest ecosystems. It follows then that the harvesting of these natural

resources must be carried out on a sustainable basis, in the interest of the long-term maintenance of the health care system of Indonesia. The most urgent needs can be categorized as follows.

Seven urgent needs

1. Inventory work on medicinal plants must be continued until it has been completed.
2. Information on how exactly these plants are used by traditional societies must be recorded now.
3. Species taken from the wild must be taxonomically identified.
4. The geographic distribution of medicinal plant species indigenous to Indonesia and their habitat requirements must be researched.
5. The wise use of indigenous medicinal plant species in Indonesia must be stimulated, starting with a thorough analysis of the sustainability of the present harvesting pattern.
6. Feasibility studies should be undertaken with a view to lessening impacts on the remaining natural stands of certain valuable species.

7. Designing and implementing monitoring programs for species that will still have to be collected in large quantities from the wild. Monitoring should be based on the principle of 'adaptive management'. It should cover both domestic and international trade in indigenous medicinal plants, in accordance with national and international regulations.

Efforts to sustain and possibly even increase the supply of material used in traditional medicine should be seen in a broader context, including the use of wild plants for other than medicinal purposes. In this way, a broad agenda, action plan or national strategy for conservation and the sustainable utilization of the indigenous medicinal plants of Indonesia can be formulated and implemented. We hope to stimulate interest in such an action plan and find ways to implement it.

The Demand of Medicinal Herbs

Nowadays, there are around 997 traditional medicine manufacturers in Indonesia, and 98 of them are industries. A few of the big jamu industries have exported their products such as cosmetics, oils and herbal medicines for women and babies to Malaysia, Singapore, India, Pakistan, Europe, the United States, and several Middle Eastern countries.

The proceeds of the herbal medicine sales domestically reached around 2 trillion Indonesian Rupiahs

(Rp) annually or about US\$225 million, and its export value was only US\$5 million, according to data from the Indonesian Food and Drug Supervisory Body (POM) in 2002. The figure was very small compared with China's domestic sale value at US\$5 billion and its export at US\$1 billion. The demand for herbal diet supplements alone is estimated to be worth US\$43 billion annually in the global market.

"Business opportunities for traditional medicines are very promising, both in the domestic and international markets. We have not tapped it maximally," said Eng. Asyantini, the organizing committee chairman of the Indonesian Biopharmacy Exhibition and Congress (IBEC) that was held in Yogyakarta from July 14 to 18, 2004. She said that the herbal medicine industry uses only around 500 species out of the total 7,000 known medicinal plants available in the country.

Meanwhile, according to Charles Saerang, secretary general of the Indonesian Traditional Herbal Medicines Producers Association (GPJTI), it is quite ironic that in herbal medicine production, the country falls far behind countries such as China, Korea and Japan. Political will from the government is a must for the country to rapidly develop the traditional medicine industry if Indonesia wants to compete with other countries.

Indonesia will host an International Workshop on "Enhancing Cooperation on



Herbal Medicine: A Solution for Community Health Problems" and an Herbal Fair in Jakarta, this year. Initially the event was scheduled for July 27 to 30, 2004, but it has been postponed indefinitely. The workshop and exhibition are to be organized by the Non-Aligned Movement Center for South-South Technical Cooperation (NAM CSSTC) and the India-based Center for Science and Technology of Non-aligned and other Developing Countries (NAM S&T Center).

The international workshop and exhibition are expected to address key issues such as enhancing cooperation; covering issues of research, trade, business development, and intellectual property rights; and promoting the use of herbal medicines in the disease treatments such as HIV/AIDS, diabetes, and hypertension. It will also discuss solutions for community health problems in which traditional medicine could be used as an alternative to modern medicine due to its affordability, local production, cultural acceptance, and direct benefit to both producers and consumers.

The market for medicinal herb is still promising, as long as we keep our commitment and hard work into it. Both processed and natural medicinal herbs are still a prospective market in Indonesia as an agricultural country. The domestic industries of medicinal herb processing are also growing from time to time.



PT. Daya Manunggal

With Damatex Indonesia has become a sort of standard developed for polyester or cotton customers



Making its debut as weaving and coloring fabric, PT Daya Manunggal was established in 1961 in Salatiga, Central Java. Formerly, the company's founders were purely the textile importers. Having seen Indonesia's market potentials, they came to decision to set up their own

textile factory with the assistance of several Japanese textile companies such as Kurabo and Toyoda.

PT Daya Manunggal's products use "**Damatex**" brand name, which is a short for company's name: (**DA**yA **MA**nunggal **TEX**tile). It first exported its fabric to Singapore, Middle East among others Iraq, where at that time it won 15 million

yard contract. Then, exports to the European countries and Australia etc. followed. In addition, companies like Marubeni, Mitsui, Mc Spancer, Total, Itochi and so on also imported textile produced by PT Daya Manunggal. The founding companies are proud that the products made meet the quality standard of which is equal to that of the Japanese companies make. By

attaching “made in Indonesia” on every products, PT Daya Manunggal’s products are known for **DAMATEX Indonesia brand** overseas.

Damatex Indonesia is not specifically designed to develop export markets, but thanks to the stable quality of products and years of production focus on polyester/cotton fabric, the name of **Damatex Indonesia** either home or overseas markets is very identical to polyester/cotton fabric.

Damatex Indonesia has become a sort of standard developed for polyester/cotton users. With the good quality, the product price is 2 to 4 percent higher than competitors’ products. PT Daya Manunggal’s buyers dare to pay higher because they believe that the higher price is compensable to the fabric.

PT Daya Manunggal sells its products through periodical business visits and thanks to the development of information and technology, communication is made every time through e-mail and phone if necessary.

Promotion is carried out by opening booths for selling products to the regions that are still new and using buyer’s networks through reference of customers.



PT Daya Manunggal remains competitive by maintaining the level of stable standard quality and giving maximum service to the customers and staying away from price war with the competitors.

It adopts strategy to seek information from the customers as early as possible and take anticipation of customers’ move. Thereby, it can be made as a measuring rod for the product’s sale in the future.

Data of PT Daya Manunggal’s export shows an increasing performance from year to year, especially over the last five years.



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PT ADIMULIA SARIMAS

Continuously builds global trade partners

PT Adimulia Sarimas Industri (Sarimas) is a soap manufacturing company whose factory is located in Medan-North Sumatera. Founded 2002, Sarimas is a subsidiary company of Adimulia Group with its

core business in palm oil plantations that have been operating since 1970.

The main business now focuses on producing bath soap with category of fruit aromatic soap, beauty soap, and soap with medicines. Beside

bath soap, Sarimas also produces powder detergent and laundry soap. Over the next years, Sarimas will also produce various toiletries products.

Its factory facilities of production unit are located on 30,000 square meters land, which takes 30-minute drive from Medan city.

Belawan, a busy and Indonesia's biggest seaport, is made as port of departure for Sarimas products. In its process of production, the company has equipped with a laboratory to guarantee the needed standard of quality.

The raw material used to produce soap is prepared in such way that its supplies are continuously available. The raw material is 100% vegetable oil and coconut oil.

PT. Adimulia Sarimas is member of Chamber of Commerce and Industry (KADIN) with registration number 10201D0440A. It has secured permit from the Ministry of Industry as a manufacturing company. Every year, Sarimas promotes actively its soap products through some overseas exhibitions. Sarimas participated in the International scale expos: "National Merchandise and Commodity Show in Jakarta, NAFED coordinated overseas exhibitions such as Gulf Beauty, Dubai in 2005, Saitex Exhibition, Johannesburg-South Africa in 2005, Hong Kong Exhibition in 2005 and Exhibition in Singapore in 2006.

At the local market, two of the





Sarimas soap products, SONOMA and JOI have won quality acknowledgement from Ministry of Health of the Republic of Indonesia. The local market accepts both products thanks to cooperation with the partner distributors. The products are evenly distributed in the domestic markets. Early 2004, Sarimas started to export soap to overseas markets like Asia, Pacific and Africa. Sarimas is deemed to have bigger chance to expand its market abroad. The corporate mission is to build a global trade image and meet the customers' needs and adopt as well as put forward a quality guarantee system. (wd)



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