JOURNAL OF TROPICAL ETHNOBIOLOGY

Vol. V No. 2 July 2022 P-ISSN 1693-6892
E-ISSN 2722-0257

The Ethnobiological Society of Indonesia

Several Medicinal Plant Species Need Enrichment Planting

Andianto	National Research and Innovation Agency (BRIN), Cibinong, Indonesia
Agus Ismanto	National Research and Innovation Agency (BRIN), Cibinong, Indonesia
Rosi M. Tampubolon	Ministry of Environment and Forestry, Bogor, Indonesia
Corresponding email	andiant068@yahoo.co.id

ABSTRACT

Pulai (*Alstonia scholaris*), *kayu manis*/cinnamon (*Cinnamomum burmanii*, *Cinnamomum iners*), *pakanangi*/*kisereh* (*Cinnamomum parthenoxylon*/*Cinnamomum porrectum*), *kulilawang* (*Cinnamomum halmaherae*), agarwood (*Aquilaria* sp., *Gyrinops versteeghii*, and *Gyrinopsis cumingiana*), and *pasak bumi* (*Eurycoma longifolia*) are some medicinal plants species that grow in plantations or natural forests. The exploitation of these species causes their existence to be scarce or almost not known, with the result that is needed the policy to save the existence of medicinal plants species. Industries of herbal medicine which exploit the raw material from nature need to build seedlings and enrichment areas. The collaboration between medicinal industries with local people to build medicinal plant species plantations can be developed. This study informs a field review of some medicinal plant species from several regions during the research activities from 2005 to 2009.

Keywords: Agarwood, cinnamon, enrichment, exploitation, *pasak bumi*

INTRODUCTION

Medicinal chemicals derived from parts of forest trees are one example of beneficial non-timber forest products (NTFPs). According to Dalimartha (2008), medicinal plants are plants with the potential to be used as medicinal herbs as well as raw materials for modern medicines. No less than 1000 out of 30,000 tree species in Indonesia potentially as raw materials for medicine (Zuhud, 1991), and according to Jafarsidik (1986), as many as 87 species of medicinal trees are trees that grow in the forest.

Only a little information regarding the existence and condition of medicinal trees that grow and originate from the forest is currently available, a change in environmental conditions could cause certain species of medicinal trees hard to find. The excessive exploitation of medicinal tree species originating from the forest has caused scarcity to some of these species, and even to some, its existence is almost unknown. Several studies report a decline in the number of medicinal tree species. The diversity of medicinal plants used by the community around the peat swamp forest at Riam Durian in Central Kalimantan has degraded (Purwaningsih, 2011).

The increasingly intense exploitation of medicinal raw materials sourced from nature has resulted in a decrease in the number of medicinal trees that are readily available in the forest. This condition causes the existence of some medicinal plants that were abundant to be decreasing in number or even rarely found. According to Galingging (2006), proper

surveillance needs to be given to the number of medicinal tree species being consumed, due to their population in nature decreasing drastically as a result of unsustainable exploitation. Hartono (2010) stated that 78% of the medicinal plant supply has come from exploiting wild medicinal plants in the forest area. Furthermore, it is stated that at least 10.000 traditional herb industries and dozens of large-scale herbal medicine require plant supply, but unfortunately, cultivation activities have not been able to meet the needs of industrial feedstock. To determine the condition and locations where several species of medicinal plants grew in forest areas and farms from the period of 2005 to 2009, this study presents the exploration results of several species of medicinal plants as part of the research on medicinal tree wood identification. Information on the locations of some medicinal plants in natural forests, plantation forests, and farms/gardens in the period 2005 to 2009 in several regions in Indonesia can be used as an evaluation of the existence of several species of medicinal trees today.

METHODS

Exploration of medicinal plant species is carried out in the area that has been known to be its growth location. Identification of medicinal tree species was carried out by comparing samples of plant parts specimens (leaves, stems) taken from the area with collections at Forest Research and Development Center, Ministry of Environment and Forestry. The literature study was done to support the result of medicinal plant exploration activity.

RESULTS AND DISCUSSION

Several medicinal tree species found during exploration activities in the period 2005 to 2009 illustrate that the species were still present at the time in natural forests/plantations or community gardens. Whether the medicinal species are still available in the area today, is yet a question for us. Not many medicinal industry players committing to medicinal species cultivation are adding up to our concern toward the sustainable existence of the species, particularly those harvested from the forest area. In regards to the growing number of medicine industry today, an enrichment program for medicinal species that grow in natural forests should be encouraged. According to Ernikawati (2017), in the year 2001 there were 899 traditional medicine Small industries (*Industri Kecil Obat Tradisional* / IKOT) and 98 traditional medicine industries (*Industri Obat Tradisional* / IOT). The more medicine industries depend on natural resources, i.e., forests, the more threats they posed to the sustainability of the forest's medicinal tree species. Zuhud (2008) stated that due to the lack of cultivation effort, *pasak bumi* (*Eurycoma longifolia*) is currently threatened with extinction, it is excessively exploited from natural forests in Sumatra and Kalimantan and today Malaysia bought *pasak bumi* in large number from Sumatra through the black market.

This exploration can be used to consider the need to build awareness of the importance to do enrichment efforts for medicinal plants that grow in natural forests, plantation forests as well as gardens/farms. Following is a brief depiction of the condition of medicinal trees that were found during the 2005-2009 exploration.

During the period 2005-2009, exploration was carried out on seven plant species known to have medicinal properties in the regions of South Sumatra, West Sumatra, South Sulawesi, Central Java, Central Maluku, East Kalimantan, and East Nusa Tenggara. The tree

species found in those seven areas were *pulai* (*Alstonia scholaris*), *kayu manis*/cinnamon (*Cinnamomum burmanii*, *C. iners*), *pakanangi*/*kisereh* (*C. parthenoxylon*/*C. porrectum*), *kulilawang* (*C. halmaherae*), agarwood (*Aquilaria* sp., *Gyrinops versteegii*, and *Gyrinopsis cumingiana*), and *pasak bumi* (*Eurycoma Longifolia*).

Pulai can be found in South Sumatra Province. One of the locations where *pulai* can be found is at forest area for specific purpose (*Kawasan Hutan Dengan Tujuan Khusus* /KHDTK) Palembang Forest Research Agency. They are *pulai putih* (*Alstonia scholaris*), *pulai hitam* (*A. angustiloba*), and pulai rawa (*A. pneumatophora*) (Andianto, 2009).

Exploration in 2007 at Bukit Gompong-Petak Tinggi Village, Kota Gadang Talang-Solok Regency, West Sumatra Province gave us information that *kayu manis*/cinnamon (*Cinnamomum burmanii*) is mostly found in natural forests and community gardens (Figure 1). Cinnamon plants have become one additional income source for the local community. Cinnamon is also widely grown in Cindranae Village, Maros Regency, South Sulawesi. Another area with a fairly wide distribution of cinnamon trees is Peninis-Windujaya Village, Kedungbanteng Subdistrict, it is part of North Serayu mountainous area which lies beneath the hillside of Mount Selamet, Central Java. There are two species of cinnamon trees in this area, namely *Cinnamomum burmanii* with the local name *keningar* and *Cinnamomum iners* with the local name Manis or Ki Teja (Andianto et al., 2007).

Figure 1. *Kayu manis* vegetation in Solok (West Sumatera)

Exploration in 2008 found the existence of the *pakanangi*/*kisereh* tree with the Latin name *Cinnamomum parthenoxylon* in Donggala Regency (Figure 2), Central Sulawesi Province. *Pakanangi* was found in the cocoa plantation that belongs to the local community. It had small in diameter, around 23 centimeters, which grew from a stump (Andianto et al., 2008).

Cinnamomum halmaherae is known to the locals as *kulilawang*. The species was found in the custom forest area of the Telutih Baru Village, Tehoru Subdistrict, Central Maluku Regency (Figure 3). The location is a mountain slope area that borders the outer boundary of the Manusela National Park. During the exploration activities in 2009, the location was an area with numerous corals. Along the location of the exploration were found 25 saplings, and 15 trees with a diameter of about 25 to 30 centimeters (Andianto et al., 2009).

Several species of agarwood-producing trees were found in medicinal plant explorations in 2006 in the Samboja Subdistrict, Kutai Kertanegara Regency, East Kalimantan Province. The agarwood-producing trees that were found namely *Aquilaria malaccensis*, *Aquilaria beccariana*, and *Aquilaria microcarpa*. According to Zuhud (2008), agarwood (*Aquilaria malaccensis* Lamk.) grows in the lowland rainforest ecosystem. Exploration done in the same year found another agarwood-producing tree namely *Gyrinops*

versteghii and *Gyrinopsis cumingiana* which were found at RPH South Anfoang working location, East Nusa Tenggara Province. These two species of agarwood-producing trees grow in conditions of calcareous soils which are poor in nutrients and water (Andianto and Mandang, 2006).

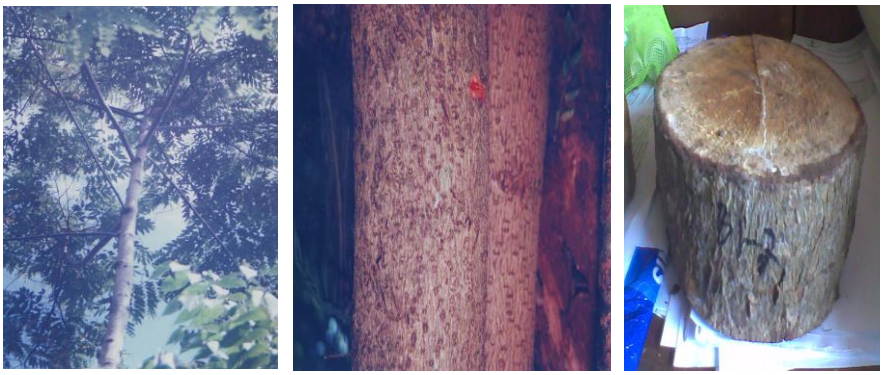

Figure 2. Plant and stem of *pakanangi* from Donggala

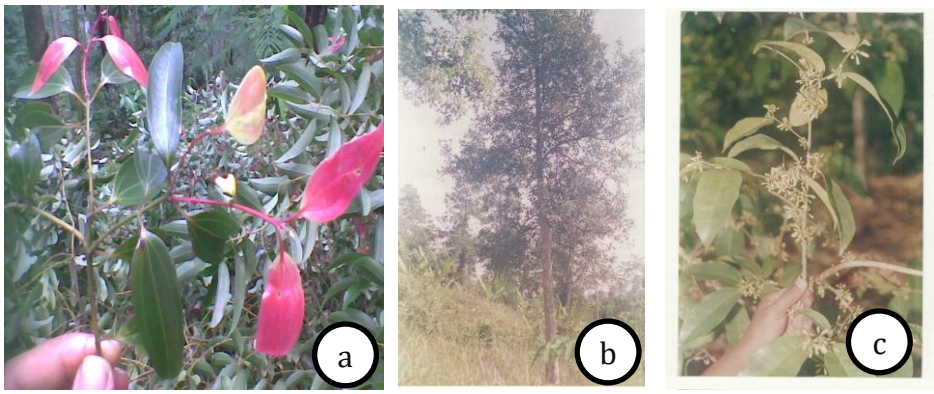

Figure 3. Leaf of *kayu manis* (a) and agarwood (b, c)

The exploration of *pasak bumi* medicinal plants (*Eurycoma longifolia*) in 2005 was carried out around the West Bangkinang, Kampar Subdistrict, Riau Province. The area where the *pasak bumi* grows was a customary forest (Ulayat) which later turns into a community garden (Figure 4). Local people still consider the species as weeds, thus they are cleared out during land clearing. However, it can easily germinate, which may be caused by its roots which store a lot of food reserves that are also rich in medicinal content (Andianto and Mandang, 2005). According to Zuhud (2008), *pasak bumi* grows in the lowland rain forest with altitudes 0 - 1000 m above sea level, in humid climates, especially at Sumatera and Kalimantan.

Based on explorations conducted from 2005 to 2009, it was evident that *pakanangi*, *kulilawang*, *gaharu* tree species (especially *Gyrinops verstegii* and *Gyrinopsis cumingiana)*, and *pasak bumi* were medicinal tree species that are beginning to be hard to find in nature (natural forests and plantation forest). With no enrichment effort on the species, the supply of raw materials for the medical industry will be depleting fast, which can ultimately bring down the industry that depends heavily on raw materials from nature. Zuhud and Haryanto (1994) expressed concern about the matter, it stated that if the preservation effort of the medicinal plants is not carried out there will be a shortage of raw material supply in the future, and even the extinction of certain medicinal plant species. Government policy that requires the industry to build an area of medicinal tree enrichment is one of the efforts that

need to be implemented if we do not want to lose the already-endangered medicinal tree species. The medicinal industry should have collaborated with local communities to develop medicinal tree cultivation programs, to maintain the sustainability of their businesses while also giving way to increasing local people's income. Efforts to build cooperation that includes the medicinal industry, the government, and local communities can be improved through in-situ and ex-situ conservation of medicinal species. According to Noorhidayah et al. (2006), in-situ conservation is an effort to manage the forest area which is the original habitat of medicinal plants, while ex-situ conservation is a protection activity carried out outside the native habitat of the plant, cultivation of medicinal plants species from the forest can be seen as one of ex-situ conservation.

Figure 4. Leaf of *kulilawang* (a), *pulai* (b), and *pasak bumi* (c)

CONCLUSIONS

Many areas in Indonesia have potential to produce medicinal plants, however, they generally grow in natural forests. The medicine industrial dependence on raw supplies from nature will lead to a decreased availability of medicinal trees in the forest. The exploitation of medicinal species needs to be balanced with the enrichment effort of the species both in-situ as well as ex-situ.

ACKNOWLEDGEMENTS

All authors have contributed significantly, and all authors agree with the content of the manuscript.

REFERENCES

Andianto, and Waluyo T. 2009. *Identifikasi kayu dan kulit (pepagan) Pulai* (*Alstonia* sp.). Laporan Hasil Penelitian. Program Insentif DIKTI untukPeneliti dan Rekayasa LPND dan LPD. Pusat Penelitian dan Pengembangan Hasil Hutan. Bogor. Unpublish.

Andianto, Rulliaty, S., Damayanti, R., and Waluyo, T.K. 2009. *Identifikasi jenis kayu berkhasiat obat: Anatomi kayu dan kulit (pepagan) Kulilawang dan beberapa jenis dari suku Lauraceae*. Laporan Hasil Penelitian Tahun 2009. Pusat Penelitian dan Pengembangan Hasil Hutan. Badan Penelitian dan Pengembangan Kehutanan. Departemen Kehutanan. Bogor. Tidak diterbitkan.

Andianto, Mandang, Y.I., and Damayanti, R. 2008. *Identifikasi jenis kayu berkhasiat obat: Anatomi kayu dan pepagan (kulit) Cinnamomum spp*. Laporan Hasil Penelitian. Pusat

Penelitian dan Pengembangan Hasil Hutan. Badan Penelitian dan Pengembangan Kehutanan. Departemen Kehutanan. Bogor. Unpublished.

Andianto, Mandang, Y.I., and Damayanti, R. 2007. *Identifikasi jenis kayu berkhasiat obat*. Laporan Hasil Penelitian. Pusat Penelitian dan Pengembangan Hasil Hutan. Badan Penelitian dan Pengembangan Kehutanan. Departemen Kehutanan. Bogor. Unpublished.

Andianto, and Mandang, Y.I. 2006. *Identifikasi jenis berkhasiat obat (identifikasi jenis kayu gaharu).* Laporan Hasil Penelitian. Pusat Penelitian dan Pengembangan Hasil Hutan. Bogor. Unpublished.

Andianto, and Mandang, Y.I. 2005. *Identifikasi jenis berkhasiat obat (identifikasi jenis kayu pasakbumi).* Laporan Hasil Penelitian. Pusat Penelitian dan Pengembangan Hasil Hutan. Bogor. Unpublished.

Dalimartha, S. 2008. *Jamu, dahulu, sekarang, dan masa depan*. Makalah Semiloka: Jamu, Brand Indonesia. Kementrian koordinator Bidang Perekenomian. Jakarta.

Ernikawati, E.A.M. Zuhud, and Santosa, Y. 2017. Pendugaan potensi tumbuhan obat di Hutan Lindung Jompi Kabupaten Muna Provinsi Sulawesi Tenggara. *Media Konservasi* 22(1): 42-48.

Galingging, R.Y. 2006. Potensi plasma nutfah tanaman obat sebagai sumber biofarmaka di Kalimantan Tengah. *Jurnal Pengkajian dan Pengembangan Teknologi Pertanian* 10(1):76–83.

Hartono, B.T. 2010. *Budidaya tanaman obat lemah*. Kompas.com-29/07/2010. http://ekonomi.kompas.com/read/2010/07/29/03324438/Budidaya.Tanaman. Obat.Lemah. Accessed on 13-2-2018.

Jafarsidik, Y. 1986. *Potensi tumbuhan hutan (pohon) penghasil obat tradisional. Prosiding diskusi pemanfaatan kayu kurang dikenal*. Cisarua, Bogor. Badan Litbang Kehutanan, Bogor.

Noorhidayah, Sidiyasa, K., and Hajar, I. 2006. Potensi dan keanekaragaman tumbuhan obat di hutan Kalimantan dan upaya konservasinya. *Jurnal Analisis Kebijakan Kehutanan* 3(2): 95-107.

Purwaningsih. 2011. Keanekaragaman jenis tumbuhan obat di hutan rawa gambut Riam Durian-Kalimantan Tengah. *Jurnal Berkala Penelitian Hayati* 4D: 31–37.

Zuhud, E.A.M. 2008. *Potensi hutan tropika Indonesia sebagai penyangga bahan obat alam untuk kesehatan bangsa. Laboratorium Konservasi Tumbuhan*. Fakultas Kehutanan Institut Pertanian Bogor. Bogor.

Zuhud, E.A.M. 1991. *Upaya pelestarian tumbuhan obat di BALITRO: Pelestarian pemanfaatan tumbuhan obat hutan tropis Indonesia*. Kerjasama Jurusan Konservasi Sumberdaya Hutan Fakultas Kehutanan IPB Bogor dan Yayasan Pembinaan Suaka Alam dan Margasatwa Indonesia, Bogor.

Zuhud, E.A.M., and Haryanto. 1994. *Pelestarian pemanfaatan keanekaragaman tumbuhan obat di Indonesia*. Prosiding Pelestarian Pemanfaatan Tumbuhan Obat dari Hutan Tropis Indonesia. Jurusan Konservasi Sumberdaya Hutan Fakultas Kehutanan IPB dan Indonesian Wildlife Fund, 13-14 p.

P-ISSN 1693-6892
E-ISSN 2722-0257

Journal of Tropical Ethnobiology

VOLUME V NUMBER 2 JULY 2022

CONTENTS

ISSN 1693-6892
9 771693 689278