

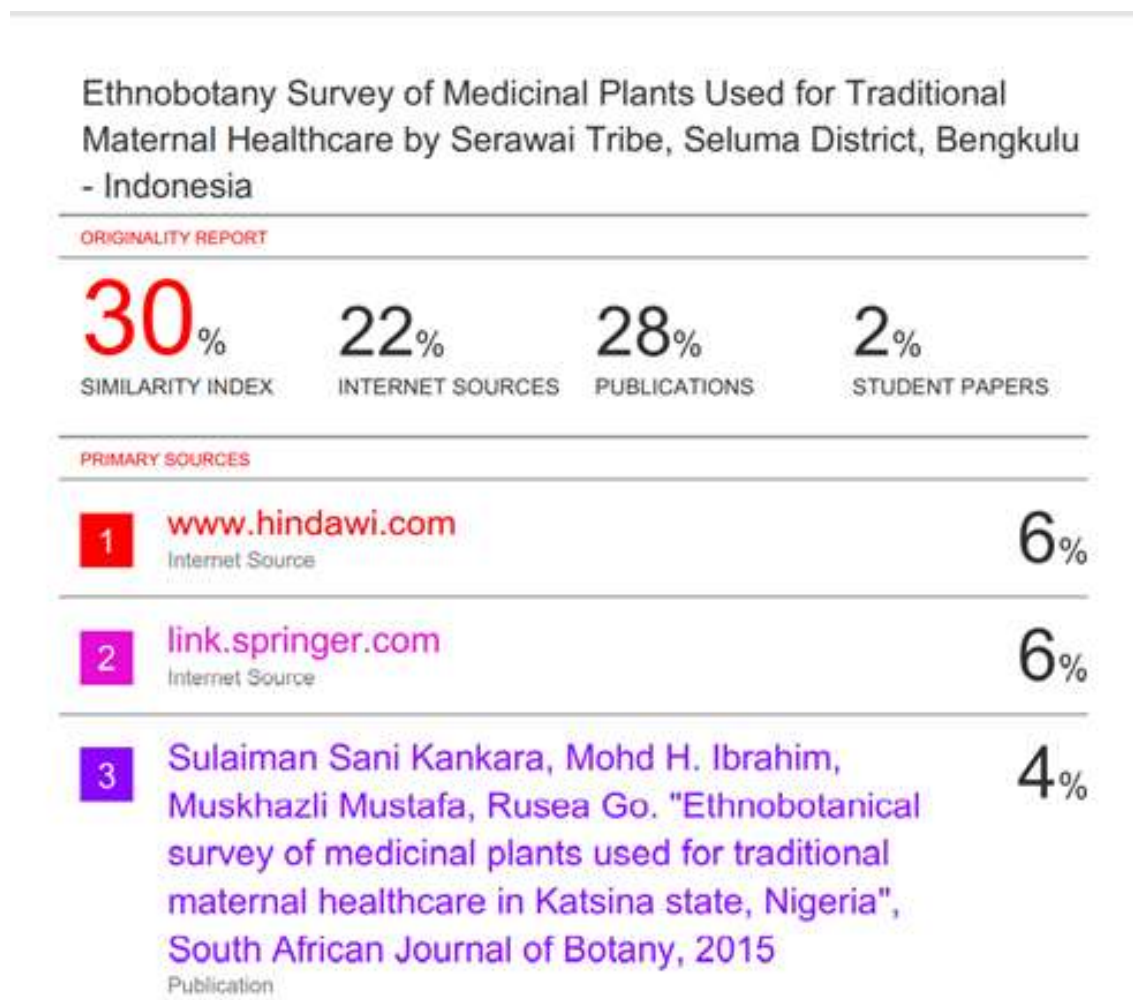
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Ethnobotany Survey of Medicinal Plants Used for Traditional Maternal Healthcare by Serawai Tribe, Seluma District, Bengkulu - Indonesia

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ABSTRACT

Background and objective: Ethnomedicine plays an important role in the maternal healthcare practice of the Serawai tribe of Seluma district, Bengkulu, however, its use has never been documented. This study, therefore, conducts an ethnobotanical survey to document the medicinal plant used for traditional maternal healthcare in the Serawai tribe.

Materials and Methods: The indigenous knowledge was gathered through interaction and questioners with traditional healers.

Results: The study provide information on 52 species belonging to 33 different families. Most of the reported plants belong to Zingiberaceae (13.5%), Euphorbiaceae, and Poaceae (5.8%). The result of life form analyses showed that herb constituted the highest proportion of medicinal plants (42.3%), followed by the tree (25%), with leaves (50.9%) as the most utilized plant parts for preparation of traditional herbal medicines. Approximately 80% of plant material are found in the surrounding village, with herbal remedies mostly prepared in the form of decoction (57.7%) and orally administered. However, among the 16 categories of diseases a total of 8 species were affected by excessive bleeding.

Conclusion: The result showed that medicinal plants had played significant roles in the management of maternal healthcare. The constraints associated with the use of this medical treatment process, is the poor interest of the younger generation in carrying out this tradition. This, has therefore, lead to a significant threat to medicinal plants. It is, therefore, necessary to preserve the indigenous knowledge on traditional medicine by proper documentation, identification of plant species used, and herbal preparation for future usage.

Key words: Ethnobotany–Maternal health–Medicinal plants–Serawai tribe–Indonesia

1 INTRODUCTION:

Over 60% of the world's population, still recognize traditional medicine as the preferred primary healthcare system, approximately 80% of developing countries directly depend on medicinal plants for health related-purposes [1]. In Indonesia, ethnomedicine has been practiced for a millennium, with significant contributions added over the years by indigenous healers that used medicinal plant, however, it is

currently used by Primary Health Care (PHC) at the community level [2].

Indonesia has a large biodiversity of plants with approximately 30,000-50,000 different species, however, only 7500 species are used as drug ingredient (LIPI 2015). The use of medicinal plants has been discovered to be used in the treatment of several diseases and health conditions, including maternal disorders, which is considered an important public and social health problem [2]. Subsequently, the rate of maternal mortality in Indonesia is 228 per 100,000 birth, and this is considerably higher when compared to India (62) and Netherlands (6) [3]. This unprecedented figure tends not to

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be disassociated from the fact that most Indonesian women employ the services of Traditional Birth Attendants (TBAs) and Traditional Healers (THs). The local healers and traditional birth attendants are referred to as “dukun” and “dukun bayi” in local Indonesian language [4]. Dukun and dukun bayi continue to play an important role in maternal healthcare, particularly in rural areas. In the Serawai tribe in Seluma district, Bengkulu, these healers are perceived as an alternative to community healthcare center [5]

Generally, the knowledge of ethnomedicine is orally transmitted by individuals, families, or the community from one generation to the next [6], and most of these teachings have not been formally documented [7]. However, in recent years, there has been a continuous decline in traditional medical practices because the younger generation shows little interest. Therefore, this study aims to document plants traditionally used for the treatment of maternal disorders by the Serawai tribe of Seluma district, Bengkulu, Indonesia.

MATERIALS AND METHODS:

Description of the study area

This study was conducted in Seluma district, Bengkulu, which lies at a latitude of 4°06'23" Southwards and longitude of 102°03'18" Eastwards. It is located 78,4 km from Bengkulu city and cover an area of 2.400.44 km².

The average temperature is 24°C, with a mean annual rainfall of 225 mm [8]. Furthermore, a census survey conducted in 2010 showed that the Talo district had a total population of 10.591. The inhabitant are mostly indigenous, and the majority are Muslims in possession of their script, known as “Surat Ulu” [9]. In addition, their economy is predominantly dependent on agriculture, mainly coffee and clove plantation.

Furthermore, rural areas were selected due to poor infrastructure in the urban region. They also suffer high levels of poverty due to a lack of appropriate income [10]. These factors urge people to indulge in traditional medicine for maternal healthcare and tend to preserve their indigenous knowledge.

Ethnobotanical data collection

Ethnobotanical data were collected by interviewing a total of 35 respondents on the indigenous knowledge of medicinal plants used for maternal healthcare, with proper documentation on the harvested products. These respondents consisting of 15 males and 20 females, were selected using the purposive sampling method [11]. The respondents were well-known in the community due to their long practice in providing services related to traditional maternal healthcare. They consist of conventional healers between 19 to 68 years while the rest were elders who had acquired knowledge on the medicinal importance of plant from parents and relatives that used it in the past.

Furthermore, both informal and formal conversations, discussion, and semi-structured interview, as well as visits to the field, were conducted. A series of individual interviews were carried out to acquire information con-



Figure 1. Map of Selumadistrict, Bengkulu.

cerning name, age, sex, level of education, and occupation. Additionally, respondents were interviewed on the local names of medicinal plants, use, type of management (wild/cultivated), and maternal health conditions. They were also asked whether a combination of individual species of plants are used to treat any particular disease, the preparation method and routes of administration. Semi-structured questionnaires were also used to collect data on life form from tree, shrub, herb, climbers, and traditional conservation practices of the reported medicinal plant. All the semi-structured reviews were supported by an independent visit to the field, which offered opportunities for more discussions with the respondents and practical identification of traditionally used medicinal plant in their natural environment. However, no plant samples were collected, while interview and discussion were conducted in local language.

3 RESULT AND DISCUSSION :

Diversity of medicinal plant species

The different types of plant species used by the traditional healers are shown in Table 1 with the families, scientific and local name arranged in alphabetical order. In addition, the botanical and local name, families, part used, method of preparation, administration route, and ailments treated are stated for each species. Table 1

The present study shows that the rural people are properly versed in nature and the natural resources in their environment. These people in a bid to get rid of various maternal

healthcare problem such as menstrual problems, conception or excessive bleeding, etc. depend on plant product. It was also discovered that approximately 52 species of plants have been used by the local communities to treat various illnesses associated with maternal health care.

A total of 52 medicinal plant species belonging to 45 genera and 33 families were used by the local communities to treat various illnesses associated with maternal health care in the Serawai tribe. *Umbelliferae* (7 species), *Euphorbiaceae*, and *Poaceae* (3 species), while most of the families (32) are represented by two or one species, as shown in Figure 2. According to Ramana 2008, scientific studies conducted on the families of these plant provide insights into their rich phytoconstituents and pharmacological actions of the active compounds they possess [12]. The dominance of these families is mainly due to some special properties, such as secondary metabolites. This illustration was observed with some differences discovered in other ethnomedicinal surveys conducted in other regions of the country [13, 14] or worldwide [15].

The life form of medicinal plants which treat maternal illnesses

The life form analysis of medicinal plants showed that herb constitute the highest proportion as shown by 22 species (42.3%), however trees were represented by 13 species (25%), while shrubs were depicted by 10 species (19.2%) and climbers were showed by 6 species (11.5%). Figure 3

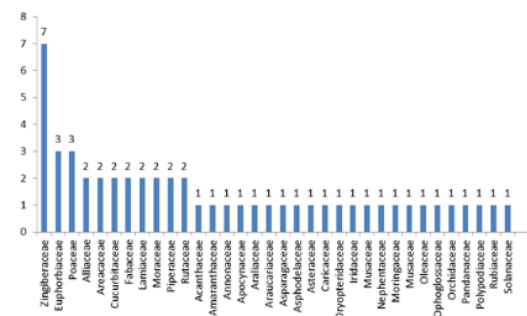


Figure 2. Distribution of plant families for traditional maternal health care in the Serawai tribe, Bengkulu

This study shows that the most represented life forms of medicinal plants in the study area were herbs followed by tree. The trend of using more herbaceous plants tends to be more advantageous as it is easier to cultivate it when they are in short supply. Naturally, there are more herbaceous plant species as compared to trees. Subsequently herbs were the most frequently used plant categories [16, 17].

Plant parts used for traditional maternal health care in Serawai tribe, Bengkulu

The inhabitants of the study area harvest different plant parts for the preparation of traditional remedies e.g. leaves, rhizome, stem, roots, fruits, etc. It was discovered that 26 species (50.9%) of plants were harvested for their leaves, 5

species (9.8%) for rhizomes, 4 species (7.8%) for stems and roots, 2 species (3.9%) for fruits and bulbs.



Figure 3. The life form of medicinal plants used for traditional maternal healthcare in the Serawai tribe, Bengkulu.

However, tuber, bark, seed, flower, sap, and the entire plant constitute the remaining 1 species (1.9%) Figure 4. The preference for leaves was because of its easy availability, harvesting, and simplicity in remedy preparation. In addition, they are the center of photochemical reactions, this causes them to be rich in metabolites. Furthermore, it accumulates alkaloids, tannins, and inulins, which are the active components of most herbal preparation [18]. Conversely, similar researches stated that it is a major dominant part in Indonesia [19, 20] or worldwide [21–23] for herbal medicine preparation.

Route of administration of medicinal plants used for traditional maternal health care in Serawai tribe, Bengkulu

The route of administration of these plants is also documented in Figure 5. The most common mode of administration is by drinking. However, the least mode of administration is by eating, with majority administered by drinking (57.7%) decoction and juice. These plants are often administered through the dermal (26.9%), which includes rubbing, topical application on the affected area, and traditional bath wash [24].

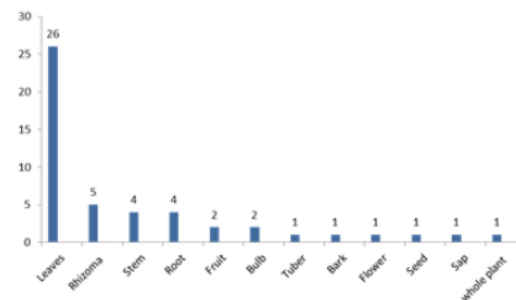


Figure 4. Plant parts used for traditional maternal healthcare in the Serawai tribe, Bengkulu.

(11.5%). This is congruent with an ethnobotanical survey conducted in East Kalimantan [25] and Edo State, Nigeria [26]. The previous studies stated that the oral intake of decoction was the most common route of administration for the medicinal plant. This involves boiling plant materials for a certain amount of time to soften it and extract its active compound [5, 14]. The predominance of oral administration tends to be explained by a high incidence of internal ailments in the region [27]. On the contrary, it is assumed that the patients mostly accept the oral route.

Most of the plant species are exclusively used for treating diseases, while some are combined to form mixtures, such as *Aloe vera*, *Citrus hystrix*, *Cymbopogon citratus*, *Graptophyllum pictum*, *Luffa acutangula*, *Musa paradisiaca*, and *Zingiber officinale* because they constitute essential ingredients and they are sometimes used as substitute for others with similar medical properties Table 1. Its uses are broadly classified to enhance fertility in female and excessive bleeding.

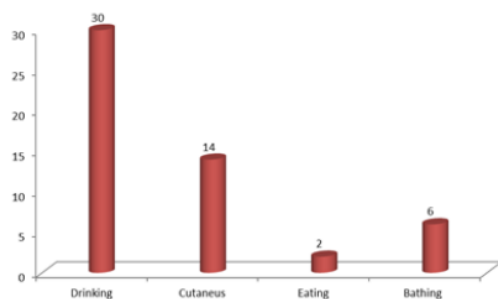


Figure 5. Route of administration of plants used for traditional maternal health care Serawai tribe, Bengkulu

Maternal health ailment treated by traditional medicinal plants

The traditional healers identified 16 maternal diseases in the study area Table 1. The highest number of plants were used to treat excessive bleeding (8 plants), boosting stamina after giving birth (7 plants), enhance fertility in female (5 plants), breast milk enhancement, breast cancer and reduce leucorhea (3 plants each). 2 plants each were used for the treatment of all sort of ovary problem, clearing of uterus after childbirth, promote conception while 1 plant each was used to relieve menstrual cramps, prevent abortion, irregularly in menstrual cycle, ovarian cyst and dysmenorrhea.

However, most of the medicinal plant species documented are used to treat bleeding. Bleeding is also one of the commonest condition treated with medicinal plants for women in other countries, such as Pakistan [28] and Namibia [29].

The plant materials are sometimes used independently or combined with other parts of the plant. Furthermore, some of the plants were used in the treatment of more than one disease, for example, *Curcuma longa* L. were used to treat four illnesses. *Curcuma alba* L. and *Drymoglossum piloselloides* (L.) C. Presl was each used for the treatment of

three diseases. Additionally, similar studies were reported from different part of Indonesia [14, 30] or Worldwide.

4 CONCLUSION:

In conclusion, traditional medicine remains the primary healthcare system in the Serawai tribe, Bengkulu. Many plant species are used for maternal healthcare. Unfortunately, the practice of medicinal plants by the Serawai tribe is still not adequately documented. There was severe depletion of conventional medicine knowledge among the indigenes of the study area due to the disinterest of the younger generation. However, it is important to conserve this knowledge by scientifically evaluating the biological activities of the medicinal plants. It is also essential to encourage the inhabitants of the study area to practice the cultivation of these plants because it was reported that they are collected from their surroundings.

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Table 1. Different types of plant species used for traditional maternal health care in the Serawai tribe, Bengkulu

No	Family	Scientific name	Local name	Habit/ domestication	Part used/Preparation	Condition managed
1	Acanthaceae	<i>Graptophyllum pictum</i> (L.) Griff	Puding abang	Shrub/cultivated	Mix the leaves with palm sugar, rhizome of ginger and boil with 5 glasses of water. It is taken orally	Excessive bleeding after child birth
2	Alliaceae.	<i>Allium cepa</i> L.	Bawang abang	Herb/cultivated	Pound the fresh part of the bulb, add some water and apply on the vagina	For the treatment of all sorts of ovary problems
		<i>Allium sativum</i> L.	Bawang putih	Herb/ cultivated	2-4 bulbs consumed directly	Ease labor
3	Amaranthaceae	<i>Celosia argentea</i> L	Bungo abang	Herb/ cultivated	Stem is boiled in water and taken orally	Clears the uterus after child birth
4	Annonaceae	<i>Annona muricata</i> L.	Srikayo	Herb/ cultivated	Leaves is boiled in water and taken orally	Breat cancer, relieves menstrual cramps
5	Apocynaceae	<i>Alstonia scholaris</i> (L.) R.Br.	Pulai	Tree/wild	Leaves is boiled in one glass of water, and taken while still warm	Clears uterus and excessive uterine bleeding after child birth.
6	Arecaceae	<i>Areca catechu</i> L.	Pinang	Tree/wild	Seed is crush and boiled in water. It is used for bathing after child birth	Gives stamina
		<i>Cocos nucifera</i> L.	Tempuruk niur	Tree/cultivated	Burn the young coconut shell, and sit on it while it's still warm	Excessive uterine bleeding after childbirth
7	Araliaceae	<i>Nothopanax</i> Scutellarium Merr.	Mangkokan	Shrub/cultivated	Grind the leaves, add some water and take it orally	Reduces leucorrhea
8	Araucariaceae	<i>Agathis alba</i> (Lam.) Foxw.	Damar	Tree/wild	Sap of the wood is burnt and applied on the vagina	Promotes conception
9	Asparagaceae	<i>Cordylone fruticosa</i> (L.) A. Chev.	Juang	Shrub/cultivated	The root is boiled in water and taken orally	Prevents abortion
10	Asphodelaceae	<i>Aloe vera</i> (L.) Burm. F.	Lidah buaya	Herb/cultivated	Pound the leaves and mix with the tip of 100m gr of a young stem of <i>Musa paradisiaca</i> and add ten leaves of <i>Cyclea barbata</i> . It is applied to the stomach for 3 days	Enhances fertility in females
11	Asteraceae	<i>Ageratum conyzoides</i> L.	Bondotan	Herb/wild	The fresh part of the leaves is pounded and applied on the vagina	Excessive uterine bleeding after childbirth, uterine tumor
12	Caricaceae	<i>Carica papaya</i> L.	Sensilo	Tree/cultivated	Leaves is boiled in water and taken orally	Gives stamina
13	Cucurbitaceae	<i>Bemincasa hispida</i> (Thunb.) Cogn.	Daun kundur	Liana/cultivated	Squeeze the leaves and add some water. Rubbed on the chest	Breast milk enhancement
		<i>Luffa acutangula</i> (L.) Roxb.	Timput	Liana/cultivated	Leaves are pounded and mixed with leaves of <i>Momordica charantia</i> . Rubbed on the stomach	Enhances fertility in female
14	Dryopteridaceae	<i>Polystichum setiferum</i> (Forssk.) Moore ex Woyt	Paku lempiding	Shrub/wild	Leaves are boiled in water and taken orally	Gives stamina
15	Euphorbiaceae	<i>Manihot esculenta</i> Crantz	Bekayu	Shrub/cultivated	The tuber is boiled, fermented and taken orally	Irregularities in the menstrual cycle
		<i>Phyllanthus urinaria</i> L.	Meniran	Herb/cultivated	Leaves are pounded and applied to the affected area	Reduces Leucorrhea
		<i>Sauropus androgynus</i> (L.) Merr.	Katu	Shrub/cultivated	Young leaves are cooked and taken orally	Breast milk enhancement
16	Fabaceae	<i>Cassia alata</i> L.	Gelinggang	Tree/cultivated	Leaves are heated on fire until withered and applied on the vagina	Excessive uterine bleeding after childbirth
		<i>Tamarindus indica</i> L.	Asam Jawa	Tree/wild	The flower is grinded and taken orally	Enhances fertility in female
17	Iridaceae	<i>Eleutherine palmifolia</i> (L.) Merr.	Bawang sabrang	Herb/ cultivated	Grind the leaves, add some water and take orally	Ovarian cysts
18	Lamiaceae	<i>Vitex pinnata</i> L.	Leban	Tree/wild	Leaves are boiled in water and taken orally	Excessive uterine bleeding after childbirth
		<i>Ocimum tenuiflorum</i> L.	Rehuku	Herb/cultivated	The root is cut into small pieces and mixed with roots of <i>Cotx lacryma-jobi</i> , <i>Saccharum officinarum</i> , and red <i>Celosia argentea</i> . Add some water and boil in young bamboo. It is taken orally	Excessive uterine bleeding after childbirth

19	Moraceae	<i>Artocarpus heterophyllus</i> Lam.	Nangko	Tree/cultivated	Grind the leaves, add some lime betel and rub on the edge of the umbilical cord	Removal of the infants' umbilical cord
		<i>Ficus septica</i> Burm. F.	Awar-awar	Tree/wild	The root is cut off and soaked in bottled water for a night. It is taken Orally	Enhances fertility in female
20	Moringaceae	<i>Moringa oleifera</i> Lam.	Daun kelor	Tree/cultivated	Leaves are pounded and applied to the affected area	For the treatment of all kinds of ovarian problems
21	Musaceae	<i>Musa paradisiaca</i> L.	Pisang kepok	Herb/cultivated	Grind the tip of the young stem, mix with leaves of <i>Aloe vera</i> and <i>Cyclea barbata</i> . It is usually rubbed on the stomach	Enhances fertility in female
22	Nepenthaceae	<i>Nepenthes kuchingensis</i> Kurata	Kantong semar	Liana/wild	The whole plant is boiled in water and taken orally	Promotes conception
23	Oleaceae	<i>Jasminum sambac</i> (L.) Aiton	Melati	Shrub/cultivated	Flower is boiled in water and taken orally	Breast milk enhancement
24	Ophioglossaceae	<i>Helminthostachys zeylanica</i> (L.) Hook	Jajalakan	Herb/cultivated	Leaves are boiled in water and taken orally	Relieves menstrual cramps
25	Orchidaceae	<i>Cymbidium finlaysonianum</i> Lindl.	Simbae buah	Herb/cultivated	Leaves are boiled in water and taken orally	Breast cancer
26	Pandanaceae	<i>Pandanus amaryllifolius</i> Roxb.	Pandan	Herb/cultivated	Boil the leaves and add cold water. It is used for bathing after childbirth	Gives stamina
27	Piperaceae	<i>Piper betle</i> L.	Sighia	Liana/cultivated	Leaves are boiled in water and taken orally	Reduces Leucorrhoea
		<i>Piper nigrum</i> L.	Saang	Liana/cultivated	Boil the leaves and add cold water. It is used for bathing after childbirth	Gives stamina
28	Poaceae	<i>Cymbopogon citratus</i> (DC.) Stapf.	Seghai	Herb/cultivated	Mix the stem with 5 leaves of <i>Citrus hystrix</i> , <i>Alpinia galangal</i> , rhizome of <i>Curcuma longa</i> , and boil. Add cold water, used for bathing after childbirth.	Gives stamina
		<i>Imperata cylindrica</i> (L.) Beauv.	Lalak	Herb/wild	The root is boiled in water and taken orally	Excessive uterine bleeding after childbirth
		<i>Saccharum officinarum</i> L.	Tebu	Shrub/cultivated	The stem is squeezed and taken orally	Relieves menstrual pain
29	Polypodiaceae	<i>Drymoglossum piloselloides</i> (L.) C.Presl.	Sisik naga	Liana/wild	Leaves are boiled in water and taken orally	Breast cancer, leucorrhoea and excessive uterine bleeding after childbirth
30	Rubiaceae	<i>Morinda citrifolia</i> L.	Mengkudu	Shrub/cultivated	Bark is boiled in water and taken, while the fruit is shredded and rubbed on the chest	Breast cancer
31	Rutaceae	<i>Citrus aurantifolia</i> (Christm.) Swingle	Limau	Tree/cultivated	The fruit is squeezed and taken	Dysmenorrhoea
		<i>Citrus hystrix</i> DC.	Jeruk purut	Tree/cultivated	Leaves are boiled together with the leaves of <i>C. longa</i> , <i>A. Galanga</i> , and the stem of <i>C. Citratus</i> . Coldwater is added and used for bathing after childbirth.	Gives stamina
32	Solanaceae	<i>Solanum torvum</i> Sw.	Terong pipit	Shrub/cultivated	Fruits are consumed directly	Breast cancer
33	Zingiberaceae.	<i>Alpinia galanga</i> (L.) Willd.	Lengkuas	Herb/cultivated	Young rhizome is chewed and then sprayed on the affected area	Relieves menstrual pain
		<i>Alpinia malaccensis</i> (Burm.f.) Roscoe	Puar laka	Herb/wild	Leaves are boiled in water and taken orally	Excessive uterine bleeding after childbirth
		<i>Curcuma alba</i> L.	Kunyit putih	Herb/cultivated	Pound rhizome, add some water and take orally	Leucorrhoea, breast and cervical cancer
		<i>Curcuma aurantiaca</i> Zijp.	Temu blobo	Herb/cultivated	Rhizome is shredded, squeezed, and taken orally	Cervical cancer
		<i>Curcuma longa</i> L.	Kunyit kuning	Herb/cultivated	Pound rhizome, add some water and take orally	Reduce Leucorrhoea, irregular menstruation, inflammation and relieves menstrual pain
		<i>Kaempferia galanga</i> L.	Tekur	Herb/cultivated	Shred and squeeze the rhizomes and add some water. It is taken orally	Breast milk enhancement

Zingiber officinale Roscoe

Beghas padi

Herb/cultivated

Boil the leaves in with a mixture of *Piper nigrum* and *Syzygium aromaticum* leaves, add some cold water. It is used for bathing after childbirth.

Gives stamina

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