Diversity of medicinal plants for pregnancy and postpartum care of *Dayak Ngaju* tribe in Mantangai sub-district, Kapuas regency, Central Kalimantan

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**Abstract.** Traditional community still maintain their knowledge in utilizing plants for curing various of disease. The study of medicinal plants in Dayak Ngaju tribe was conducted from February – May 2017 in Mantangai sub-district. The aim of this study was to obtain new information of medicinal plants diversity for pregnancy and postpartum care. The ethnomedicinal data were gathered through open ended interview, semi-structure interview, participatory observation, and field survey. Data were analysed by Index of Cultural Significance (ICS), to determine the important of medicinal plants. The study recorded 57 medicinal plants species 36 family, which were utilized for pregnancy and postpartum care. *Curcuma domestica* and *Piper longum* has the highest value of ICS. Dayak Ngaju tribe used medicinal plants for the treatment of pregnancy and postpartum in the single or mixed herbs. They used that directly by eat the parts of plants, drink as beverages, and by steam bath.

1. **Introduction**

Local knowledge about medicinal plants is a potential for the discovery of modern medicine. But until now, in all traditional communities, knowledge of medicinal plants is limited to the scope of their respective regions without any management and development efforts from any party. Meanwhile, environmental conditions always change over time, which affects the biodiversity they have. Such conditions cause concern about the loss of knowledge of medicinal plants accompanied by the extinction of various plants species.

Traditional communities have different local knowledge about the use of plants, especially as medicinal plants. Medicinal plants are all types of plants that can be used as medicinal herbs, both single and mixed, which are considered and believed to cure a disease or can affect health (Rahayu et al. 2006). This knowledge is inherited from generation to generation.

Dayak Tribe in Kalimantan was one of traditional community that still maintain their knowledge of utilizing plants as medicine. Dayak Ngaju in Mantangai sub-district was among of them. They were utilize plants for maintain their health and cure diseases, one of them was pregnancy and postpartum medication. Several studies have been done about the utilization of medicinal plants in the Dayak tribe.
in Kalimantan. Dayak Tunjung tribe in East Kalimantan, use 47 plant species to treat 35 types of disease (Setyowati 2010), the Dayak Iban tribe in West Kalimantan which uses 65 plant species to treat 38 types of diseases (Meliki et al. 2013), Dayak tribes in Landak Regency West Kalimantan uses 50 plant species to treat 44 types of diseases (Efremila et al. 2015).

The Dayak Ngaju tribe community in Mantangai sub-district currently has access to modern medicine, namely was Puskesmas Pembantu that have available in every village and chemical drugs that were easily obtained from small store and merchant ships. Meanwhile, a study of medicinal plants for pregnancy and postpartum in the Dayak Ngaju tribe in the Mantangai sub-district has never been carried out, so it is necessary to study ethnobotany of them as an effort to manage and maintain a wealth of local knowledge about medicinal plant biodiversity.

2. Materials and Methods

2.1. Study Area
Our study site located in five villages (Katimpun, SeiAhas, Katunjung, TumbangMangkutup, TumbangMuroi) of Mantangai sub-district, Kapuas regency, Central Kalimantan Province (Figure 1). The study was conducted from February – May 2017.

![Figure 1. Study site of 5 villages, Mantangai sub-district, Kapuas regency, Central Kalimantan, Indonesia](image)

2.2. Data Collection
Data was collected use ethnobotany approach with in depth interview, participatory observation, and pebble distribution methods. In depth interview and semi structured was used to 13 key informants and 108 general respondents. The key informant was sampled by purposive sampling (Bernard 2006) using the knowledge of ethnomedicine as the main sampling criteria. The key informant consisted of traditional leader (called mantir adat), village midwives and traditional herbalist (called dukun...
During the interview, plant species also collected and recorded in the voucher specimen (Martin 1995; Bernard 2006). During the interview, plant species also collected and recorded in the voucher specimen (Martin 1995; Bernard 2006). The plant species samples are preserved with alcohol 70% and dried in oven for identification purposes. The determination of voucher specimen and species identification performed in Herbarium Laboratory of Math and Natural Science Faculty, Universitas Indonesia Depok, Indonesia.

2.3. Data Analysis
Data were analyzed using qualitative and qualitative. The qualitative analysis was used statistic descriptive to describe the uses of each species. The quantitative analysis was used to estimate the cultural value with Index of Cultural Significances (Purwanto et al. 2011) of each species.

3. Results and Discussion

3.1. The concept of postpartum disease in DayakNgaju tribe
There were 57 species of plants that are utilized by the DayakNgaju people who were used for the treatment of pregnancy and postpartum care. This type of disease or treatment in this category consists of 3, namely meroyan, abortion and breast enhancement. They recognize the condition of pain suffered by women after childbirth with the term meroyan (red meruyan). Meroyan was a sick condition suffered by a postpartum mother, who was stricken 1 - 40 days after giving birth (postpartum period), characterized by a thin body, weakness and a pale face. Based on the causes, meroyan can be divided into 3: meroyanawi bane (meroyan because of the husband), meroyanawipenginan (meroyan because of food) and meroyanawiriwut (meroyan because of the wind).

Meroyanawi bane was caused by a mother who has just given birth and has not passed the puerperal period to be invited to make love by the husband. This was believed to cause pain for wife who was difficult to cure. Based on this, there was a prohibition on approaching a new-born wife for more than 40 days. Meroyanawipenginan occurs when mothers who have given birth for up to 40 days, ate the wrong foods, which are forbidden to eat, such as gummy food (can cause many gasses in the stomach) and fried foods. They were only allowed to eat cooked food by boiled or grilled. Meroyanawiriwut occurs when the mother who has just given birth is attacked by wind, so the mother who has just given birth was advised to stay at home for more than 40 days.

3.2. Diversity of medicinal plants
There were 57 plant species recognized by the DayakNgaju tribe to treat meroyan. Various plant species were utilized in single or mixed herb; that consumed by directly eat, drink as beverages or steam bath. Some of these plant species include: henda (Curcuma domestica), pinang (Areca catechu), enyuh (Cocosnucifera), lancarkuning (Indigofera sp.), bejakahkuning (Fibraureatinctoria), sewangkak (Costusspeciosus), lai (Zingiberofficinale), sikur (Kaempferiagalanga), tagaron (Crataevanurvala) and telayar (Ficusvariegata).

| Table 1. List of medicinal plants for pregnancy and postpartum of DayakNgaju tribe in Mantangai |
|-----------------------------------------------|---------------------------------|---------------------------------|---------------------------------|----------------|
| Family                                      | Scientific Name                  | Local Name                      | Part Used                       | ICS  |
| Acanthaceae                                 | JusticiagendarussaBurm.f         | Tekambat                        | Roots                           | 6.0  |
| Alliaceae                                   | Allium sativumL.                 | Bawanghaputi                     | Tubers                          | 6.0  |
| Anisophylleaceae                            | Miq.) Danser                     | Tumih                           | Roots                           | 3.0  |
| Annonaceae                                  | AnnonamuricataL.                 | nangkabelanda                   | Leaves                          | 6.0  |
|                                              | Canangaodorata(Lam.)             |                                 |                                 | 9.0  |
|                                              | Hook.f. & Thomson                | Kenanga                         | Roots                           |      |
| Family               | Species                                      | Part(s)                  | Amount |
|----------------------|----------------------------------------------|--------------------------|--------|
| Arecaceae            | *Areca catechu* L.                          | Roots, Fruits            | 6.0    |
| Asparagaceae         | *Cocos nucifera* L.                         | Enyuh                    | 6.0    |
|                     | *Metroxylon sagu* Rottb.                    | Hambie                   | 6.0    |
|                     | *Cordyline fruticosa* (L.) A.Chev           | sawangbahijau sawangbahandang | 3.0    |
| Capparaceae          | *Crataeva anurvala* Buch.-Ham.              | Tagaron                  | 6.0    |
|                     | *Costus speciosus* (J.Koening)              |                          | 3.0    |
| Costaceae            | *Mer.*                                        | Sewangkak                | 3.0    |
| Cucurbitaceae        | *Luffa acutangula* (L.) Roxb.               | Karwila                  |        |
| Cyperaceae           | *Scleria* sp.                               | Whole                    | 3.0    |
| Dilleniaceae         | *Dillenia indica* L.                        | Simpur mangkinangbalavaww | 3.0    |
| Elaeocarpaceae       | *Elaeocarpus mastersii* King                | Leaves, Roots            | 6.0    |
| Euphorbiaceae        | *Homalanthus populneus* (Geiseler) Pax      | Tatupak                  |        |
| Fabaceae             | *Indigofera* sp.                            | lancarkuning             | 6.0    |
|                     | *Tamarindus indicia* L.                     | asamkamal                |        |
| Gentianaceae         | *Fagraea racemosa* Jack.ex Wall.            | mengkuduhutan bejakahtampelas |        |
| Gnetaceae            | *Gnetum* sp.                                | Orthosiphonaristatus     |        |
| Lamiaceae            | *Vitex* sp.                                 | singutkucing             |        |
|                     | *Barringtonia racemosa* Jack. ex Wall.      | Kalapapa                 | 3.0    |
| Lecythidaceae        | *Spreng.*                                    | Putat                    | 6.0    |
| Leguminosae          | *Desmodium heterocarpon* (L.)                | jinjibatu                | 9.0    |
| Lygodiaceae          | *Lygodium microphyllum* (Cav.) R.Br.         | Tagentu                  | 6.0    |
| Lythraceae           | *Lagerstroemia speciosa* Pers.              | Muhur                    |        |
| Malvaceae            | *Sidarom x homifolia* L.                    | urutimur                 |        |
| Malastomataceae      | *Melastoma malabathricum* (L.)              | karamunting              | 6.0    |
| Menispermaceae       | *Fibraureatinctoria* Lour.                  | bejakahtakuning          | 3.0    |
| Mimosaceae           | *Mimosa pudica* L.                          | urumahamen               | 9.0    |
| Moraceae             | *Ficus variegata* Blume                      | Nangka                   |        |
| Musaceae             | *Ficus urumahomen* L.                       | Pisang                   | 3.0    |
| Myrtaceae            | *Psidium guajava* L.                        | jambubiji                | 6.0    |
|                     | *Rhodamnia cinerea* Jack                    | kambasulan               | 6.0    |
|                     | *Rhodomyrtustomentosa* Aiton (Hassk.)        | Masisin                  | 9.0    |
| Syzygiumaromaticum   | *Merrill & Perry*                           | Cengkeh                  |        |
| Family             | Species                                      | Usage                                      |
|--------------------|----------------------------------------------|--------------------------------------------|
| Syzygium sp. L. 1  | Jambuburung                                  | Leaves                                    |
| Pandanaceae        | PandanusamaryllifoliusRox b. Pudak           | Leaves, Roots                             |
|                    | BaccaraeamotleyanaMüll.Ar Rambai             | Roots                                     |
| Phyllanthaceae     | Piper betle L. Sirih                         | Fruits, Seeds                             |
|                    | Piper longum L. Cabi                         | Seeds                                     |
|                    | Piper nigrum L. Sahang                       |                                           |
|                    | Cymbopogoncitratus( DC.) Kambasarai          | Stems                                     |
| Poaceae            | Digitiasp. Kambasarai urubelanda             | Leaves, Stems, Whole                      |
|                    | Ischaemummuticum L. urugerigit               |                                           |
|                    | Oryza sativa L. Behas                        | Seeds                                     |
|                    | Saccharumofficinarum L. tewubahenda          | Roots                                     |
|                    | Stenochlaenapalustris(Burm. ) Bedd Kalakai   | Leaves                                    |
| Polypodiaceae      | Gardenia tubifera Wall. Ex kayuranda bejakakahkalalaw it | Leaves, Roots |
|                    | Uncariansp. seluangbelum                    |                                           |
| Rutaceae           | Alpiniagalanga(L.) Willd. Lengkuas Hendabaput i | Rhizomes                                 |
|                    | Curcuma amadaRoxb. hendabaputi               | Rhizomes                                  |
|                    | Curcuma domesticaVal. Henda                  | Rhizomes                                  |
|                    | Kaempferiagalanga (Linn.) Sikur              | Rhizomes                                  |
| Zingiberaceae      | Zingiberofficinale Roscoe. Lai              |                                           |

The use of *Curcumadomestica* in postpartum was by drinking the juice of the rhizome, while the decoction water of rhizomes was used to cleanse the intimate organs. The utilization of these species was believed could heal postpartum wounds. *C. domestica* has many phytochemical content including alkaloids, saponins, tannins and flavonoids which were useful for curing various of diseases. The content of saponins and flavonoids in *C. domestica* acts as antibacterial and anti-inflammatory (Ikpeama et al. 2014).

There were 23 species of plants that utilized for steam bath to cure meroyan. Various plant species include jackfruit (*Artocarpusheterophyllus*), lai (*Zingiberofficinale*), betel (*Piper betle*), urugerigit (*Ischaemummuticum*), mangkinangblawaw (*Elaeocarpus mastersii*), pawah (*Scleria sp.*), jinjibatu (*Desmodiunm heterocarpus*), putat (*Baringtoniaracemosa*), kambasarai (*Cymbopogoncitratus*), tagentu (*Lygodiummicrophyllum*) and kambasulan (*Rhodamniacinerea*). Steam bath or betetimbun (Dayak Ngaju language) was useful for mother’s body after giving birth. Steam baths in post-partum were also found in Karo community that well known as oukup. Oukup is a traditional Karo steam bath which aims to maintain the health of postpartum mothers (Nasution 2009).

The Dayak Ngaju tribe community knows kalakai (*Stenochlaenapalustris*) as a source of vegetables. In addition, they also use it as a source of breast enhancement and also blood booster for anemia. Zannah et al. (2015) states that *S. palustris* was utilized by Dayak people in Palangkaraya as
an anti-aging, breast enhancer and hemoglobin enhancer. The content of phenolic acids in *S. palustris* functions as anti-glucosidase and anti-oxidants (Chai *et al.* 2015).

Abortion was included in the category of pregnancy and postpartum care. The Dayak Ngaju tribe believes that *lengkuas* (*Alpiniagalanga*) can abort a new pregnancy. The rhizome which was pounded and then squeezed and drunk can be dangerous for mothers who were pregnant. In addition to abortion, *A. galanga* was also believed to be used as natural contraceptive drugs. Utilization of *A. galanga* as a natural contraceptive was done by drinking the juice of the rhizome after menstruation was completed. Scientific studies on the benefits of *A. galanga* as an abortion drug and natural contraceptive medicine have never been carried out, so that it becomes a novelty for the world of science. Various studies have shown the benefits of *A. galanga* as traditional medicine for curing various of diseases. Agustina *et al.* (2016) showed that *A. galanga* contains the chemical compounds of flavonoids, alkaloids, terpenoids, steroids and saponins. Flavonoids and saponins act as anti-oxidants and anti-inflammatory agents (Ikpeama *et al.* 2014); Alkaloids are useful for raising blood pressure, reducing pain, anti-microbes, sedatives, drugs for heart disease, and anti-diabetes (Agustina *et al.* 2016).

### 3.3. Plants part used as medicine

Medicinal properties derived from plants can come from many different parts of a plant including roots, bark, leaves, fruit, seeds, tubers and rhizomes (figure 2). The medicinal plant uses may contain of single species or compounds of some species. Generally the traditional medicine uses and production using simple processes such as consumed, boiled and pounded or mashed.

![Figure 2. Medicinal properties derived from plants](image)

Roots has the highest utilization for treatment pregnancy and postpartum care. A total of 29 plants species used the roots for this treatment. Some of plants that utilized their roots were *masisin* (*Rhodomyrustumomentosa*), *karamunting* (*Melastomamalabathricum*), *jinjitbatu* (*Desmodiumheterocarpon*), *mangkinangblawaw* (*Elaeocarpusmastersii*), *urugerigit* (*Ischaemummuticum*), *singutkucing* (*Orthosiphonaristatus*), *kayuranda* (*Gardenia tubifera*), *tatupak* (*Homalanthuspopulneus*). To consumed the roots, they boiled or soaked in the water than drink ones or twice a day along 40 days. Some of plants species consumed directly, by cutting roots in a very small pieces. Other species were utilized for steam bath, by boiled four or five plants species. The use of plant roots as medicinal ingredients can threaten their existences in the nature. Socialization about the importance of conservation of medicinal plants needs to be done.
The use of leaves has the second highest percentage among other plant parts that were utilized as a pregnancy and postpartum care medication. This is due to the presence of leaves that are available throughout the year, easily obtained and their extraction does not threaten the survival of plants. Efremila et al. (2015) states that leaves were the most widely used part of the plant because they were easily taken and obtained throughout the year. Silalahi et al. (2015) shows that leaves are the most widely used part of the plant as medicinal ingredients in the Simalungun Batak ethnic group.

A total of 57 species (36 families) were utilized by Dayak Ngaju tribe in Mantangai sub-district for pregnancy treatment and postpartum care. The plants parts were more utilized in medication were roots and leaves. They consumed it by directly eat, drinks as beverages and steam bath.

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References
[1] Agustina, S., Ruslan & A. Wiraningtyas. 2016. Skrining fitokimia tanaman obat di kabupaten Bima. Cakra Kimia (Indonesian E-Journal of Applied Chemistry) 4(1): 71—76.
[2] Bernard, H.R. 2006. Research methods in anthropology 4th edition qualitative and quantitative approaches. Altamira Press. Rowman & Littlefield Publisher, Inc. Lanham: xvi + 803 hlm.
[3] Chai, T.T., M.T. Kwek, H.C. Ong & F.C. Wong. 2015. Water fraction of edible medicinal fern Stenochlaena palustris is a potent α-glucosidase inhibitor with concurrent antioxidant activity. Food Chemistry. Diakses dari: www.elsevier.com/locate/foodchem. Pada hari senin, tanggal 20 November 2017 pk. 15.20 WIB.
[4] Efremila, E. Wardeenar & L. Sisillia. 2015. Studi etnobotani tumbuhan obat oleh etnis suku Dayak di desa Kayu Tanam kecamatan Mandor kabupaten Landak. Jurnal Hutan Lestari 3(2): 234—246.
[5] Hoffman, B & T. Gallaher. 2007. Importance indices in ethnobotany. Ethnobotany Research & Applications 5: 201—218.
[6] Ikpeama, Ahamefula, Onwuka, G.I., Nwankwo & Chibuzo. Nutritional composition of turmeric (Curcuma longa) and its antimicrobial properties. International Journal of Scientific & Engineering Research. 5(10): 1085—1090.
[7] Martin, G.J. 1995. Ethnobotany, a “people and plants” conservation manual. The World Wide Fund for Nature. Chapman & Hall. London: xxiv + 268 hlm.
[8] Meliki, R. Linda & I. Lovadi. 2013. Etnobotani tumbuhan obat oleh Suku Dayak Iban Desa Tanjung Sari kecamatan Ketungau Tengah kabupaten Sintang. Protobiont 2(3): 129—135.
[9] Nasution, J. 2009. Oukup, ramuan tradisional suku Karo untuk kesehatan pasca melahirkan: suatu analisis bioprospeksi tumbuh-tumbuhan tropika Indonesia. [Tesis]. Sekolah Pascasarjana, Institut Pertanian Bogor, Bogor. Indonesia.
[10] Purwanto, Y., E. Munawaroh & R. Saparita. 2011. Prosedur dan metodologi penelitian valuasi ekonomi hasil hutan non kayu di kabupaten Malinau. Dalam: Purwanto, Y., R. Saparita & E. Munawaroh. 2011. Keanebaragaan jenis hasil hutan non kayu berpotensi ekonomi dan cara pengembangannya di kabupaten Malinau. LIPI Press, Jakarta: 12—24.
[11] Rahayu, M., S.Susiarti, D. Suliantiari & S. Prawiroatmodjo. 2006. Kajian pemanfaatan tumbuhan sebagai obat tradisional oleh masyarakat lokal di kecamatan Wawonii, pulau Wawonii, Sulawesi Tenggara. Jurnal Teknologi Lingkungan PLTT-BPPT: 183—190.
[12] Setyowati, F.M. 2010. Etnofarmakologi dan pemakaian tanaman obat suku Dayak Tunjung di Kalimantan Timur. Media Litbang Kesehatan XX(3): 104—112.
[13] Sheil, D., R.K. Puri, I. Basuki, M. van Heist, M. Wan, N. Liswanti, Rukmiyati, M.A. Sardjono,
I. Samsoedin, K. Sidiyasa, Chrisandin, E. Permana, E.M. Angi, F. Gatzweiler, B. Johnson & A. Wijaya. 2004. *Mengeksplorasi keanekaragaman hayati, lingkungan dan pandangan masyarakat lokal mengenai berbagai lanskap hutan*. CIFOR, Bogor: x + 101 hlm.

[14] Silalahi, M., J. Supriatna, E.B. Walujo & Nisyawati. 2015. Local knowledge of medicinal plants in sub-ethnic Batak Simalungun of North Sumatera. *Biodiversitas* 16(1): 44–54.

[15] Turner, N.J. 1988. The importance of a rose: Evaluating the cultural significance of plants in Thompson and Lillooet interior salish. *American Anthropologist*. 90(2): 272–290.

[16] Zannah, F., M. Amin, H. Suwono & B. Lukiati. 2015. Ethnobotany study of kelakai (*Stenochlaena palustris* Bedd) as an endemic fern at Central of Kalimantan. *Proceeding of 6th International Conference on Global Resource Conservation*: 31–33.