



# Inventory of Plant Types to Overcome Vertigo Through Betangas

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**Abstract:** Vertigo is an abnormal feeling characterized by a feeling as if the position of the body and the position of the environment around it are moving when in fact they are not. Vertigo is usually treated with drugs, in Singkawang City vertigo is still treated with the traditional betangas method. Betangas is an activity of taking a steam bath with a mixture of decoctions of plants which has been carried out for generations, betangas is also an indicator for plant preservation. Utilizing and processing plant ingredients to overcome vertigo through betangas, one of which is Singkawang City. This study aims to inventory the types of plants used to treat vertigo through betangas. The method used was interviews with three informants (village shamans), direct observation of areas using betangas in Singkawang City, sampling and data recording, making herbarium and identification processes. The results of the study showed that there were seven types of plants used to treat vertigo through betangas, which included, *Basilicum* sp. the leaves are used, *Dianella* sp. the roots are used, *Pandanus amaryllifolius* Roxb. ex Lindl. the leaves are used, *Cymbopogon nardus* Linn. the stem part is used, The *pucuk* used are the roots, *geganti* used the roots, *mensui* used the root part of the bark. It can be concluded that plants to overcome vertigo use various types of plants, and for each type a different part is used in betangas.

**Keywords:** Betangas; Plant inventory; Vertigo

## Introduction

In general, people know the efficacy of traditional medicines based on information passed down from generation to generation (Agustikawati & Putri, 2021; Alang et al., 2022; Azmin et al., 2019; Hamzah et al., 2023; Lestari et al., 2023; Murwitaningsih & Maesaroh, 2023; Nopiyanti & Fitriani, 2019; Valentino et al., 2022). Local wisdom that takes place in local communities is knowledge that takes place in a symbiotic relationship of mutualism with the forest ecosystem in the research location (Anggraini et al., 2020; Fanisah et al., 2023; Wahyuningsih et al., 2022; Wibisono & Azham, 2017; Yusmerianti et al., 2023). Identification and inventory related to the diversity of plant species in each region is important because meeting the great demand for

medicinal plants and for the preservation of medicinal plants can already be obtained (Abdullah et al., 2023; Hakim et al., 2020; Santi et al., 2022; Syamsuri et al., 2023; Yelianti et al., 2023; Yusro et al., 2021).

Vertigo is caused by a disorder in the inner ear or vestibular system (Ramchandra, 2021). The inner ear is a complex fluid-filled structure that houses the peripheral sensory portions of the auditory and vestibular systems (Skuladottir et al., 2022). As for other ways to deal with vertigo by bathing in the sauna, it has also been used to treat musculoskeletal pain and chronic headaches (Laukkanen et al., 2018). Heat therapy may have additional benefits for muscle function, vascular health and cerebral blood flow, and indicators of metabolic health (Hunt et al., 2020).

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Based on the results of observations and interviews with the people of Singkawang City, West Kalimantan, Indonesia, they have local wisdom, namely betangas. Medicinal plants are still considered to have an important role in utilizing certain plants to treat vertigo using the betangas method. Betangas are performed accompanied by a village shaman with herbal ingredients. The procedure for the betangas method is to boil several types of medicinal plants which are put in a pot, then the pot containing the plants is given water and boiled until it boils a traditional mat covered with a cloth to keep the steam from escaping. Then someone will enter the room by taking the steam that comes out of the pot little by little, then rub the steam slowly on the body. Betangas can make a person relax, and can make the vertigo sensation temporarily disappear. Local wisdom from the results of interviews with village shamans conducted should be inherited, therefore it is necessary to carry out identification to find out the existence of plants and efforts to use medicinal plants and their preservation.

## Method

This research is using a qualitative method. The data collection technique used was data collection through interviews with three village shamans and direct field observations to collect plant samples and knowledge about the traditional use of medicinal plants at the study site. The plant samples obtained were then made into herbarium specimens.

The following are the steps for making a herbarium, namely: (1) the size of the specimen is adjusted when it is to be dried, so that the dried product can later be placed on cardboard covered with manila paper measuring 28.5 x 41 cm, (2) the specimen is attached to newsprint using masking tape, (3) the specimens were covered with newspaper, then pressed using a bamboo stake measuring 40 cm x 50 cm and tied with raffia rope, (4) the samples were dried in the sun for several days until they dried and became stiff, (5) then in the mounting process specimens that have been dried in the sun to dry are sewn/glued/tapped onto white manila paper measuring 28.5 cm x 41 cm. (6) The preserved plants are given a special drying process to prevent insects and fungi, both before and after being pasted on the manila paper, or put in another container to be stored and given camphor, (7) then the labeling process, where the finished herbarium specimens are labeled with a description of the serial number, collector's name, species name, location of material collection, habitat, ecological data, and data other things that are known and deemed necessary to be recorded on the label, for example the use of plants in society, (8) herbarium

specimens are covered with transparent plastic to protect them from damp air, (9) herbarium specimen collections are stored on shelves with labels containing collection information suspended on the preserved specimen (Tjitrosoepomo, 2011). The finished herbarium is used for the identification process. Identification in research on medicinal plants was carried out at the Tanjungpura University MIPA Biology Laboratory with an identification number 102/A/LB/FMIPA/2022. Tanjungpura.

## Result and Discussion

Based on the research conducted, seven species of medicinal plants were obtained, four of which were obtained from complete plant samples and three of which were obtained from traditional drug stores in the form of parts of plants used. The plant parts used were three species of roots, two species of leaves, and two species of stem (Table 1). The seven species of plants used for betangas include the following: lam, tugari, fragrant pandan, citronella, shoots, geganti, and mensui (Figure 1).

In Table 1 it can be seen that there are seven types of medicinal plants used in the process of treating vertigo in the betangas method. Four types of plants including: lam, tugari, fragrant pandanus, citronella were carried out by the identification process at the Tanjungpura University MIPA Laboratory. The other three types of plants including: shoots, geganti, and mensui could not be identified because these plants were only obtained dry plants with incomplete parts, because these three types of plants were obtained from China according to the results of interviews with sellers of medicinal plants. So only local names were obtained, therefore the identification process of these three plant species could not be carried out.

Medicinal plants used in the raw herbal trade; Dry twigs include dry roots, rhizomes, leaves, so they are usually difficult to identify (Urumarudappa et al., 2019). Since a long time, herbal medicine has been used to prevent and treat various health problems around the world (Hapid, 2023; Kristinawati et al., 2023; Zaidi et al., 2022). The part of the plant that is widely used as medicine is the leaf. Leaves are a part that is always available and its utilization is relatively simple (Ernikawati et al., 2023; Kristinawati et al., 2023; Nopiyanti & Fitriani, 2019; Patiola et al., 2023).

In this study the parts used in plants to treat vertigo are lam leaves and pandan leaves, others such as tugari roots, shoot roots and geganti roots, and citronella stems.

Based on direct observation of lam plants (*Basilicum* sp.) the following morphological characteristics are

obtained: lam plants have upright, branched stems, about 0.5-0.9 cm high. The branched stems are green. Lam leaves are about 5-10 cm long. The leaves are green

or sometimes also purplish red, with serrated leaf edges, pointed leaf tips, blunt leaf bases. The petioles are 1.3-2.5 cm long. The leaves are used in medicine.

**Table 1.** Species of Medicinal Plants to Overcome Vertigo with the Betangas Method in Singkawang City

Scientific Name	Local Name	Habitus	Part used	Classification
<i>Basilicum sp.</i>	Lam	Higrofit	Leaves	Kingdom: Plantae Filum: Tracheophyta Class: Magnoliopsida (dicots) Ordo: Malvales Famili: Malvaceae Genus: <i>Basilicum</i> Spesies: <i>Basilicum sp.</i>
<i>Dianella sp.</i>	Tugari	Xerofit	Root	Kingdom: Plantae Filum: Tracheophyta Class: Liliopsida (monocots) Ordo: Liliales Famili: Liliaceae Genus: <i>Dianella</i> Spesies: <i>Dianella sp.</i>
<i>Pandanus amaryllifolius</i> Roxb. Ex Lindl	Pandan wangi	Higrofit	Leaves	Kingdom: Plantae Filum: Tracheophyta Class: Liliopsida (monocots) Ordo: Pandanales Famili: Pandanaceae Genus: <i>Pandanus</i> Spesies: <i>Pandanus amaryllifolius</i> Roxb. ex Lindl.
<i>Cymbopogon nardus</i> Linn	Serai wangi	Xerofit	Stem	Kingdom: Plantae Filum: Tracheophyta Class: Liliopsida (monocots) Ordo: Liliales Famili: Liliaceae Genus: <i>Cymbopogon</i> Spesies: <i>Cymbopogon nardus</i> Linn.
-	<i>Pucuk</i>	Herba	Root	-
-	<i>Geganti</i>	Herba	Root	-
-	<i>Mensui</i>	Pohon	Bark	-

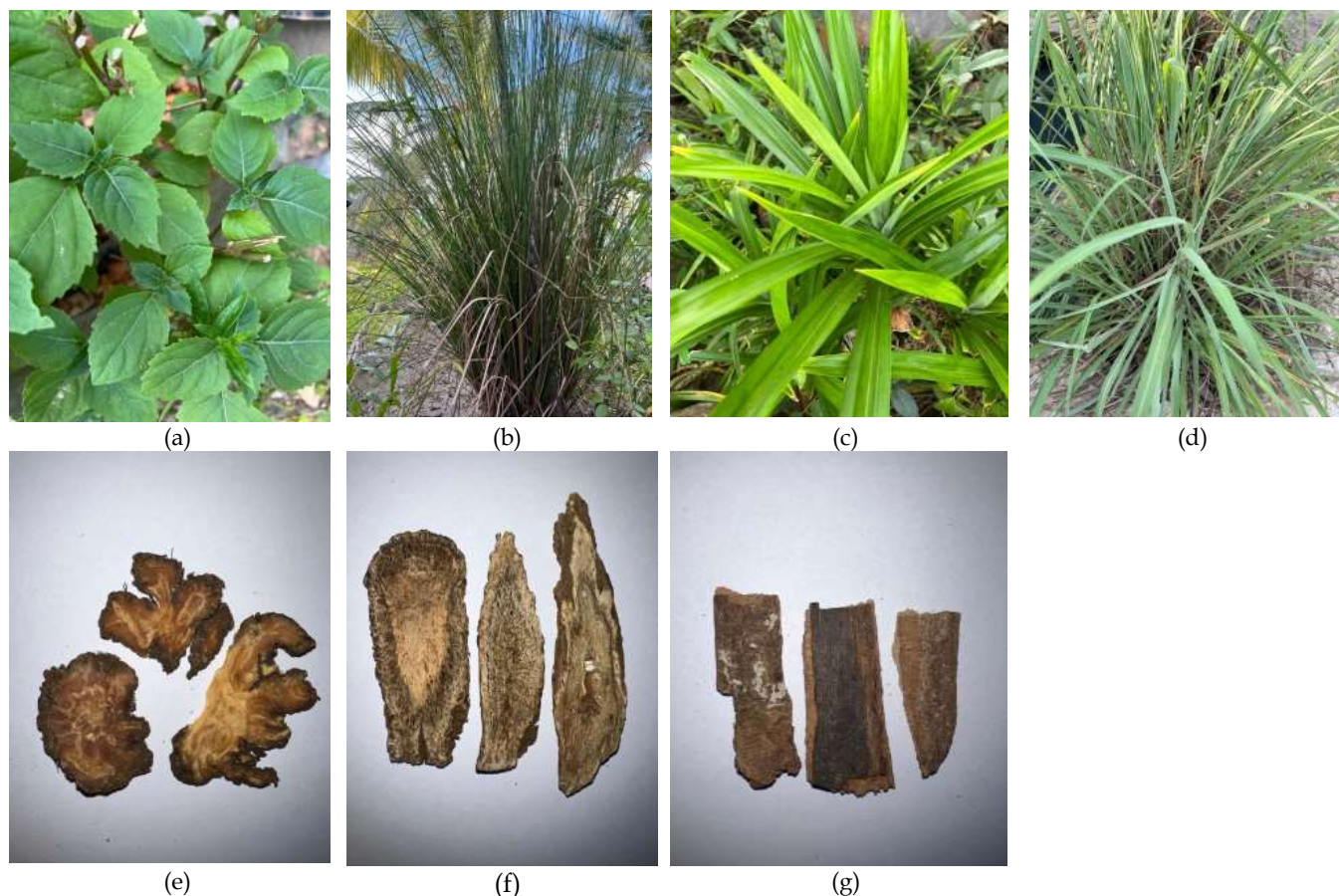
Based on the literature on tugari plants (*Dianella sp.*) the following morphological characteristics are obtained: Tegari plants have hard, longitudinal leaves and form swords with a length of about 30 cm. White flowers of irregular size, located on a cluster of flower stalks. Young fruit is green and when it is old it is metallic blue to purple (Asikin & Khairullah, 2021). The root part used in medicine is fragrant. The part of the plant from the tugari root that is used as a rodenticide is the root part. Tugari root contains plumbagin compounds which are hydrolyzed and oxidized. Plumbagin is a derivative of quinone compounds that are useful as drugs and poisons, such as chimaphilin, plumbagin, eleutherin, alkaloids, and polyphenols (Asikin, 2018; Asikin & Khairullah, 2021).

Based on the literature on pandanus wangi (*Pandanus amaryllifolius* Roxb. ex Lindl.) the following

morphological characteristics were obtained: Pandanus Wangi is a shrub, about 1-2 m high. The stem is branched creeping, at the base of the root out. Fragrant pandan leaves are green, at the end of the leaf there are small spikes, when squeezed this leaf smells good. Single leaf with a base hugging the stem, arranged in threes in a spiral line. Leaves thin, smooth, pointed tip, flat edge, parallel bones. 40-80 cm long, 3-5 cm wide and thorny attached to the mother leaf bone under the edges. Some varieties have jagged leaf edges (Dalimartha, 2008). The part of the leaf used in medicine is fragrant. Pandan wangi contains chemical alkaloids, flavonoids, saponins, tannins. The antioxidant activity of phenolic compounds plays an important role in absorbing and neutralizing free radicals and decomposing peroxides. Phenolic antioxidants and paraffins can also reduce heart disease and cancer (Magaretta et al., 2011). Pandan leaves

contain several bioactive compounds as follows: carotenoids, flavonoids such as catechins, naringin, kaempferol, rutin, epicatechin, myricetin, luteolin, quercetin and phenolic acids including gallic acid, cinnamic acid, ferulic acid, caffeic acid which act as

antioxidants and have antidiabetic activity (Bhuyan & Sonowal, 2021).



**Figure 1.** Species of medicinal plants to treat vertigo with betangas in Singkawang City: (a) Lam; (b) Tugari; (c) Pandan wangi; (d) Serai wangi; (e) Pucuk; (f) Geganti; (g) Mensui

Based on the literature on citronella plants (*Cymbopogon nardus* Linn.) the following morphological characteristics are obtained: citronella plants can grow up to 1-1.5 m. The leaves reach 70-80 cm in length and 2-5 cm in width, are light green, rough, and have a strong aroma (Wijayakusuma, 2008). Lemon grass has a large root and is a type of fibrous root with short sympathies. Lemongrass stalks are clustered and tuberous, and soft and hollow. The stem is a tuber midrib on the shoot and is yellowish white. But there are also those that are purplish or reddish white (Arifin, 2014). The main ingredient of *Cymbopogon nardus* Linn. has the highest citronellal and geraniol content (Kamal et al., 2020; Putri, 2018; Silvia et al., 2021). *Cymbopogon nardus* Linn. It has many benefits until it was noted by previous generations that it functions to treat high fever, typhoid fever, colds in the body, skin, lung paralysis, headaches, waist pain, skin and genecological treatment (Fauzi et al., 2020). The *Cymbopogon nardus* Linn plant contains chemical

compounds in the form of alkaloids, saponins, tannins, flavanoids, anthraquinones, essential oils, aldehydes, geraniol alcohol, citral, nerol, metal heptenone, and dipentene (Arifin, 2014). The content of secondary metabolites in the form of saponins and tannins have mucolytic activity using the stem decoction of *Cymbopogon nardus* Linn. for testing mucolytic activity. The results of his research showed that the stem decoction of *Cymbopogon nardus* Linn could provide mucolytic activity. Saponins can play a role in stimulating the release of bronchial secretions and increasing the activity of a cell that has cilia so that it can secrete phlegm. The metabolite content in the form of tannins has the ability as an astringent which can shrink the mucous membranes in the intestine (Clara et al., 2022).

Based on direct observation, the plant with the local name *pucuk* has the following morphological characteristics light roots such as brownish-yellow

loamy wood, the outer surface looks rough, not solid and breaks easily. When the root is broken, a thin cavity appears. The root part is used in medicine. Based on direct observation, the plant with the local name *geganti* has the following morphological characteristics the outer surface appears dark brown and the middle surface is yellowish, the roots are dense and not easily broken, corrugated cambium rings. The root part is used in medicine. Based on direct observations, the plant with the local name *mensui* has the following morphological characteristics the bark is woody, rough and hard, not easily broken, dark yellowish brown in color. The part of the bark used in medicine is fragrant.

## Conclusion

There are species of plants that are used as medicinal plants to treat vertigo through betangas, including *Basilicum* sp., *Dianella* sp., *Pandanus amaryllifolius* Roxb. Ex Lindl, *Cymbopogon nardus* Linn, *pucuk*, *geganti*, and *mensui*.

## Author Contributions

This article was prepared by three authors, namely R.G.P.P, H.F, and G.G. All members of the writing team worked together in every stage of completing this article.

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## Conflicts of Interest

The authors declare no conflict of interest.

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