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# ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS BASED ON LOCAL KNOWLEDGE IN SEDAYU VILLAGE, JUMANTONO, KARANGANYAR, CENTRAL JAVA

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## ABSTRACT

Medicinal plants are one of the important aspects of traditional medicine development. The utilization of medicinal plants is a very valuable local wisdom and a culture that needs to be investigated more thoroughly so that knowledge about it does not become extinct. The purpose of this study is to determine the plant species used, the parts of plants used, and how to process them. This research was conducted in May 2023 in Sedayu Village, Jumantono District, Karanganyar Regency, Central Java. The informants of this research were the people of Sedayu Village. The method used was snowball sampling, which focuses on the community of medicinal plant users. The collected data was descriptively, qualitatively, and quantitatively assessed. The results showed that 52 species of medicinal plants were used by the Sedayu Village community, including ginger, kencur, turmeric, red betel, and ciplukan. The most utilized part of medicinal plants was the leaves and the most common processing method was boiling and drinking. This information can be a reference for the village government and the community regarding how important a type of plant as a medicine is to be preserved.

**Keywords:** medicinal plants, sedayu village, utilization and processing of medicinal plants

## INTRODUCTION

Medicinal plants are plants that reduce, eliminate, or cure a person from certain diseases through traditional medicine. Traditional medicine from natural ingredients in the form of simplisia has empirically proven to be used to maintain health and prevent and treat diseases. Experience and skills passed down from generation to generation are the source of information about medicinal plants and their utilization (Lesmana et al., 2018). In general, medicinal plants are plants that contain active substances in their stems, roots, leaves, or other portions, allowing them to be used as ingredients to treat disease (Rusmina et al., 2015). The use of drugs derived from plants or natural ingredients is important because, in general, natural ingredients have fewer adverse effects than synthetic or chemical ingredients. The Indonesian people still demand traditional medicine because it is considered efficacious and relatively cheap (Marwati & Amidi, 2019). Community knowledge about the efficacy of medicinal plants needs to be preserved (Ismiyanti et al., 2021). The World Health Organization (WHO) recommends traditional medicine for public health maintenance, disease prevention, and treatment, particularly for degenerative and chronic diseases. In addition, WHO also supports efforts to improve the safety and efficacy of traditional medicines (Lesmana et al., 2018). Currently, the community's use of plants for treatment is still ongoing. This demonstrates the continuity between humans and nature in the form of human relationships with plants, which is known as Ethnobotany (Dharmono, 2018). Based on this description, the issue arises as to what types of medicinal plants are still utilized by the community of Sedayu Village and how medicinal plants are processed and utilized. It is necessary to research the Ethnobotany Study of Medicinal Plants Based on Local Knowledge in Sedayu Village Community, Jumantono Karanganyar, to gain additional knowledge. This research can serve as information and literature guidelines for future studies in communities that use medicinal plants as constituents in traditional rural medicine, particularly in Sedayu Village.

## MATERIALS AND METHODS

This research was conducted in May 2023 in Sedayu Village, Jumantono District, Karanganyar Regency, Central Java. This study used a questionnaire as a data collection instrument. Purposive sampling was used to identify key informants, and snowball sampling was used to select the next respondent based on the direction of the preceding respondent. The number of informants in this study was 26 (male: 9; female: 17), with the majority working as herbal medicine sellers. The method was chosen to find out the species still used by the Sedayu Village community, as well as their ethnobotanical use and sustainability. The types and data sources used in this research were primary and secondary. Then, the data that has been obtained is analyzed using qualitative and quantitative descriptive analysis techniques. Quantitative data analysis uses the following formula (Utomo, 2017):

$$\% \text{ type of plant} = \frac{\sum \text{types of plants recommended by respondents}}{\sum \text{total plants}} \times 100\%$$

$$\% \text{ Organs} = \frac{\sum \text{plant organs used}}{\sum \text{total organs}} \times 100\%$$

$$\% \text{ Obtaining} = \frac{\sum \text{source of obtaining plant species}}{\sum \text{total source of obtaining}} \times 100\%$$

## RESULTS AND DISCUSSION

These traditional medicinal plants are important in rural communities in Sedayu Village. The community utilizes medicinal plants based on knowledge of how to use drugs passed down from generation to generation. These medicinal plants were utilized as traditional medicine, an alternative and initial step for treating diseases obtained directly from the forest and yard, and some are planted or cultivated by the community for personal needs. Based on the results of interviews and observations in the field, 52 species of medicinal plants were found and utilized by the Sedayu Village community. The species of medicinal plants are listed in Table 1 below.

Table 1. Types of medicinal plants and plant organs used

No.	Plant Type	Scientific Name	Family	Organs used
1	Alang - Alang	<i>Imperata cylindrica</i>	Poaceae	Roots
2	Tamarind	<i>Tamarindus indica</i>	Fabaceae	Fruit
3	Red Onion	<i>Allium ascalonicum</i>	Liliaceae	Tubers
4	Starfruit	<i>Averrhoa bilimbi</i>	Oxalidaceae	Fruit
5	Bidara	<i>Ziziphus spina-christi</i>	Rhamnaceae	Leaves
6	Binahong	<i>Anredera cordifolia</i>	Basellaceae	Leaves
7	Brotowali	<i>Tinospora crispa</i>	Menispermaceae	Stem

8	Java Chili	<i>Piper retrofractum</i>	Piperaceae	Fruit
9	Cloves	<i>Syzygium aromaticum</i>	Myrtaceae	Flower
10	Ciplukan	<i>Pysalis angulata</i>	Solanaceae	Leaf, Fruit
11	Pomegranate	<i>Punica granatum</i>	Lytraceae	Leaf, Fruit
12	Insulin	<i>Smallanthus sonchifolius</i>	Asteraceae	Leaf
13	Ginger	<i>Zingiber officinale</i>	Zingiberaceae	Rhizome
14	Guava	<i>Psidium guajava</i>	Myrtaceae	Leaves
15	Distance	<i>Jatropha curcas</i>	Euphorbiaceae	Leaf
16	Lime	<i>Citrus aurantiifolia</i>	Rutaceae	Fruit
17	Kaffir Lime	<i>Citrus hystrix</i>	Rutaceae	Leaves
18	Cumin	<i>Nigella sativa</i>	Ranunculaceae	Seeds
19	Katuk	<i>Sauropus androgynus</i>	Euphorbiaceae	Leaves
20	Cinnamon	<i>Cinnamomum burmannii</i>	Lauraceae	Stem
21	Kedawung	<i>Parkia timoriana</i>	Fabaceae	Seeds
22	Coconut	<i>Cocos nucifera</i>	Arecaceae	Fruit
23	Moringa	<i>Moringa oleifera</i>	Moringaceae	Leaves
24	Basil	<i>Ocimum sanctum</i>	Lamiaceae	Leaves
25	Kemuning	<i>Murraya paniculata</i>	Rutaceae	Leaves
26	Kencur	<i>Kaempferia galanga</i>	Zingiberaceae	Rhizome
27	Cat's Whiskers	<i>Orthosiphon aristatus</i>	Lamiaceae	Leaves
28	Turmeric	<i>Curcuma longa</i>	Zingiberaceae	Rhizome
29	White Turmeric	<i>Curcuma zedoaria</i>	Zingiberaceae	Rhizome
30	Lavender	<i>Lavandula angustifolia</i>	Lamiaceae	Flower
31	Lawang	<i>Illicium verum</i>	Illiciceae	Flower
32	Lempuyang	<i>Zingiber zerumbet</i>	Zingiberaceae	Rhizome
33	Galangal	<i>Alpinia galanga</i>	Zingiberaceae	Rhizome
34	Aloe Vera	<i>Aloe vera</i>	Asphodelaceae	Leaves
35	Mangosteen	<i>Garcinia mangostana</i>	Clusiaceae	Skin
36	Noni	<i>Morinda citrifolia</i>	Rubiaceae	Fruit
37	Nutmeg	<i>Myristica fragrans</i>	Myristicaceae	Seeds
38	Papaya	<i>Carica papaya</i>	Caricaceae	Leaf, Fruit
39	Salam	<i>Syzygium polyanthum</i>	Myrtaceae	Leaves
40	Sambiloto	<i>Andrographis paniculata</i>	Acanthaceae	Leaf
41	Secang	<i>Caesalpinia sappan</i>	Fabaceae	Stem
42	Senggani	<i>Melastoma candidum</i>	Melastomataceae	Leaves
43	Lemongrass	<i>Cymbopogon citratus</i>	Poaceae	Stem, Leaf
44	Betel Green	<i>Piper betle</i>	Piperaceae	Leaves
45	Red Betel	<i>Piper ornatum</i>	Piperaceae	Leaves
46	Soursop	<i>Annona muricata</i>	Annonaceae	Leaves
47	Srikaya	<i>Annona squamosa</i>	Annonaceae	Leaves
48	Suket Teki	<i>Cyperus rotundus</i>	Cyperaceae	Tuber
49	Telang	<i>Clitoria ternatea</i>	Fabaceae	Flower
50	Temuireng	<i>Curcuma aeruginosa</i>	Zingiberaceae	Rhizome
51	Temukunci	<i>Boesenbergia rotunda</i>	Zingiberaceae	Rhizome
52	Temulawak	<i>Curcuma Zanthorrhiza</i>	Zingiberaceae	Rhizome

Table 1 describes the medicinal plants often used by the Sedayu Village community. Ginger (*Zingiber officinale*), a rhizome plant belonging to the Zingiberaceae family, had the greatest percentage of medicinal plant utilization at 88.5% (Fig. 1). Ginger rhizome has many well-known health benefits, including anti-inflammatory and antioxidant properties, as well as the ability to relieve nausea. In addition, ginger is also used to treat digestive problems (Linda & Lovadi, 2013). Besides ginger, the plant with the highest medicinal plant use was kencur (*Kaempferia galanga*) at 84.6%. People in Indonesia frequently use kencur to treat vomiting, vertigo, cough, and other digestive issues. The greatest percentage of medicinal plant use was also found in turmeric (*Curcuma longa*), at 73.1%. In medicine, turmeric can be used as a pain reliever for women who are menstruating and increase appetite to treat liver disease (Arum et al., 2012)



## Ethnobotanical Study Of Medicinal Plants

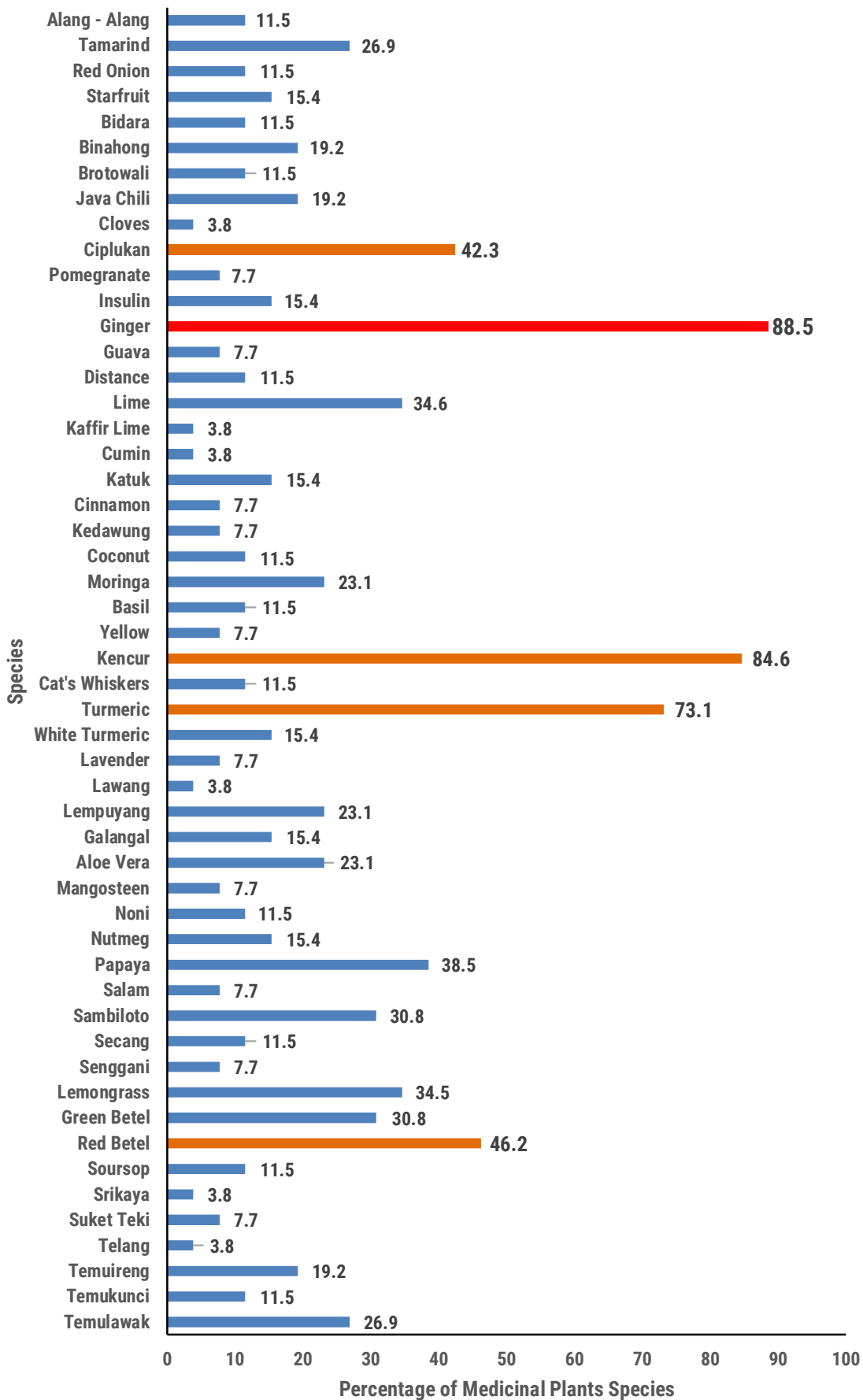


Figure 1. Percentage of medicinal plant types used by the Sedayu village community

Plant parts (organs) used by the Sedayu Village community as medicine were roots, stems, seeds, fruits, flowers, leaves, skin, rhizomes, and tubers. The leaves of 22 varieties of medicinal plants (42.6%) were the most commonly used part (organ) of medicinal plants. Figure 2 depicts the proportion of plant parts that were used as ingredients in medicine.

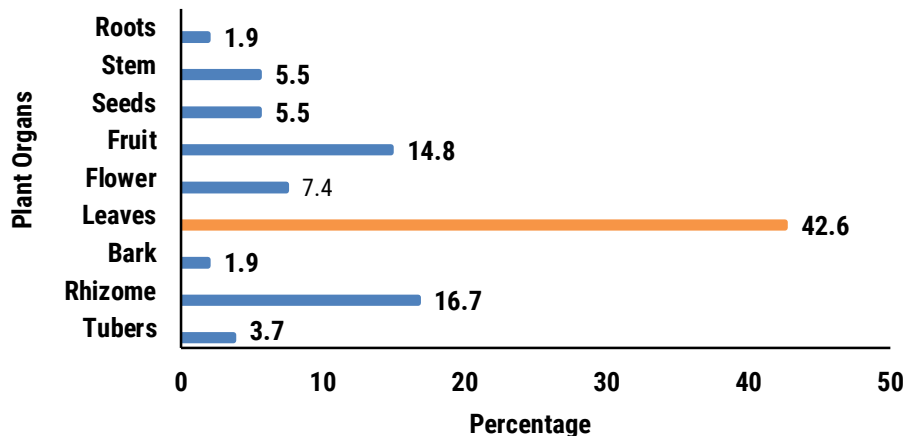


Figure 2. Percentage of Plant Organs Utilized as Medicine

Leaves are more widely used because they are considered easy to obtain and process and have greater efficacy than other plant parts. Furthermore, the most convenient component to extract or gather from the sources is the leaves (Farhatul, 2013). In addition, leaves have a high water content (80%) and contain essential oils, phenols, potassium compounds, and chlorophylls that are capable of curing diseases (Nulfitriani et al., 2013). Similar research results were also found in the Maybrat Tribe community in Sembaro Village, Ayam Maru district, South Sorong Regency, where the leaves are the most widely used part as medicinal plants (Howay et al., 2003). The Dayak Iban community predominantly utilizes leaves from plants for medicinal purposes (Meliki et al., 2013).

The use of other plant parts, such as stems, rhizomes, tubers and roots, are more difficult to collect because they require uprooting and cutting for their utilization, which ecologically affects their amount in nature (Fadilah et al., 2015). This is in accordance with the results of research by Febrianti and Krisnawati (2021), namely, the selection of types and ingredients from medicinal plant parts can be efficacious to reduce or cure certain diseases optimally through processing stages derived from roots, stems, and leaves with the right dosage.

Based on the results of research from 26 respondents with 52 species of medicinal plants, processing can be done in one of five ways: boiled then consumed, brewed then consumed, mashed then applied, squeezed, fermented, or unprocessed. Some varieties of medicinal plants can be processed in multiple ways, such as kencur, which can be consumed directly (without processing), mashed, then applied, or boiled and consumed. If the disease or complaint was distinct, the processing was performed differently. Figure 3 shows the percentage of medicinal plant utilization based on the processing method.

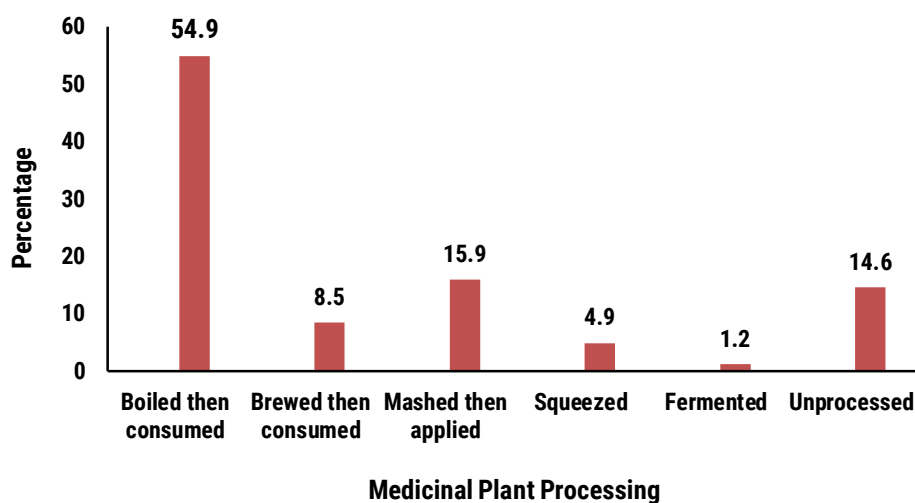


Figure 3. Percentage of medicinal plant processing methods

Figure 3 shows that medicinal plants based on the processing method are mostly boiled and then consumed (54.9%). Similar research results were also found in the Baluran National Park community, where boiling and then consuming plants is the most widely used method (Yaqin, 2020). The Osing Tribe community also shows that boiling and then consuming is the most widely used way of utilizing medicinal plants (Utomo, 2017). The community believes that applying the boiling procedure to medicinal plants eliminates any pathogens present in the plants. Boiling is also believed to be effective because, generally, the diseases treated are types of internal diseases. Another possibility related to the processing method, people who do it more by boiling is because it is easier to take the juice or properties of the plant (Wulandara et al., 2018). The medicinal plant parts used are boiled first and then consumed as an internal disease treatment. Additionally, locals hold the belief that ingesting medicinal plants for internal ailments produces a more rapid effect and reaction than utilizing them topically and even more rapidly than employing other methods to utilize medicinal plants (Efremila et al., 2015).

The advantages of treatment using medicinal plants are that they do not cause side effects compared to using modern drugs or drugs from chemicals. Also, certain herbs are easily available around the yard and easy to make. The process of making traditional medicines is generally very simple, including those that are brewed with water, made into powder and then dissolved in water; some are taken with juice, and the treatment method is generally done orally (drunk) (Azmin et al., 2019). Medicinal plants that are processed in the form of concoctions are generally in the form of jamu, which is formulated with medicinal plants as the basic ingredient and added with other supporting ingredients found in nature (Arisandi & Andriani, 2011).

Due to the benefits of traditional medicine, conservation is one of the means by which medicinal plants must be preserved. Furthermore, knowledge pertaining to the refining and application of medicinal plants must be transmitted orally and through direct practice in order to ensure its eternal sustainability. As awareness of the advantages of medicinal plants grows, it is anticipated that the community will become more engaged in endeavours to preserve these plants, thereby ensuring the continued generation of knowledge as local wisdom.

## CONCLUSION

The Sedayu Village community utilizes a total of 52 different species of medicinal plants, with ginger being the most commonly utilized (88.5%). The Sedayu obtain medicinal plants through cultivation, the wild, or the market; leaves are the most utilized plant organs (42.6%). Processing and utilization of medicinal plants by the Sedayu community is mostly done by boiling and then drinking (54.9%). In order to preserve knowledge regarding medicinal plants, the Sedayu community engages in sustainability actions, such as imparting this information to children and local residents through direct or oral practice.

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