

Ethnobotanical Study of Tea Plants Based on Local Wisdom in Ngargoyoso District, Karanganyar Regency, Central Java

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ABSTRACT

KEYWORDS:

*Ethnobotany
Local wisdom
Ngargoyoso
Tea Plant*

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Ethnobotany is the relationship between humans and natural resources to meet needs such as food, medicines, traditional ceremonies, and other community life. Tea plants are plants that have a high selling value and have many health benefits. This study aims to determine the ethnobotanical aspects ethnobotanical of tea plants based on local wisdom in Ngargoyoso District, Karanganyar Regency, Central Java. This type of research is qualitative using data collection methods with surveys and interviews conducted by finding reliable informant sources. The data analysis used qualitative descriptive means. The results showed that there were 48 out of 50 people liked tea drinks, 37 people used tea plants as drinks, and 13 people used them as medicine. The level of knowledge of the Ngargoyoso people on the ethnobotany of tea plants is relatively low. The parts of the tea plant that can be used are young leaves, old leaves, young stems, and old stems.

1. INTRODUCTION

Ethnobotany is a branch of biology that studies the relationship between humans and plants in their traditional use activities. In line with the rapid pace of science and technology, ethnobotany has developed into a branch of science that includes the relationship between humans and natural resources, for example food, medicine, traditional ceremonies, and other community life (Karina., 2022). This is also in line with research (Nuraeni., 2022) Ethnobotany can be used to document the knowledge of traditional societies that utilize various plants used in everyday life.

Ethnobotanical studies can be seen not only through the use of plants but also through how communities maintain and preserve existing plants and the reciprocity between humans and plants (Rahimah., 2019). Humans can adjust to daily life to satisfy themselves and their desires by the availability of natural resources in their environment. The interaction that occurs between humans and their environment can produce a local culture that is in harmony with their environment. Ethnobotanical studies are very important so that knowledge of the local wisdom of traditional communities in the use of these plants is not lost due to the flow of modernization.

The view of life and science as well as various life strategies in the form of activities carried out by the community in meeting their needs are called local wisdom. The scope of local wisdom is so broad and diverse. This is in line with research (Njatrijani, 2018) Local wisdom can be wisdom that has recently emerged in a community as a result of its interaction with the natural environment and its interaction with other communities and cultures. Local wisdom is different from traditional wisdom. Local wisdom emphasizes place and lokaitas from generation to generation.

Some ethnobotanical researchers choose Indonesia as a research destination because Indonesia is rich in flora and fauna. Indonesian people utilize the natural resources of plants and animals to meet daily needs such as food, health, education, and cultural needs. According to research (Mutmainnah, 2020) Indonesian society has long utilized abundant natural resources and knowledge passed down from generation to generation.

One of the plants used in everyday life is the tea plant. Tea plants include plants originating from the subtropics. Tea plants can thrive well at altitudes of 500-2,000 m asl and temperatures ranging from 10-27°C. Tea plants have a high selling value and affect the economy in Indonesia as a source of income for the community, create extensive jobs, and encourage agro-industry in the area around the region. Tea plants can be used as ingredients for tea drinks. The tea-drinking culture in most of the population on the island of Java likes tea drinks. So that this habit can support the prospect of tea in Indonesia. Tea, in general, is divided into three types, namely oolong tea, green tea, and black tea (Azurianti, 2022). Tea production is highly dependent on climatic conditions, increased rainfall, high dry season, and lack of moisture can result in decreased tea production. High and low production of tea plants does not escape the quality of the soil and the availability of nutrients and management (Robi, 2019). Soil that is suitable for tea plants is soil that contains organic matter, does not rock, and has a pH between 4-6. One of the areas of Central Java that is suitable for tea plants is the Ngargoyoso area, Karanganyar Regency.

Ngargoyoso area is a sub-district located in Karanganyar Regency, Central Java which has a very large tea plantation land and has an altitude ranging from 800 – 1,540 m asl. The air around the plantation area is quite cool and cold. With this vast tea plantation, local people can use the plantation as a tourist area that has its attraction for visitors who come. Tea production in the Ngargoyoso area is very well known by tourists as typical souvenirs of Ngargoyoso.

Based on the problems described, tea plants have many benefits in everyday life and in supporting the economy, therefore this study aims to determine the ethnobotanical aspects ethnobotanical of tea plants based on local wisdom in Ngargoyoso District, Karanganyar Regency, Central Java to support knowledge and culture about tea plants.

2. MATERIALS AND METHODS

2.1. Location and Time of Research

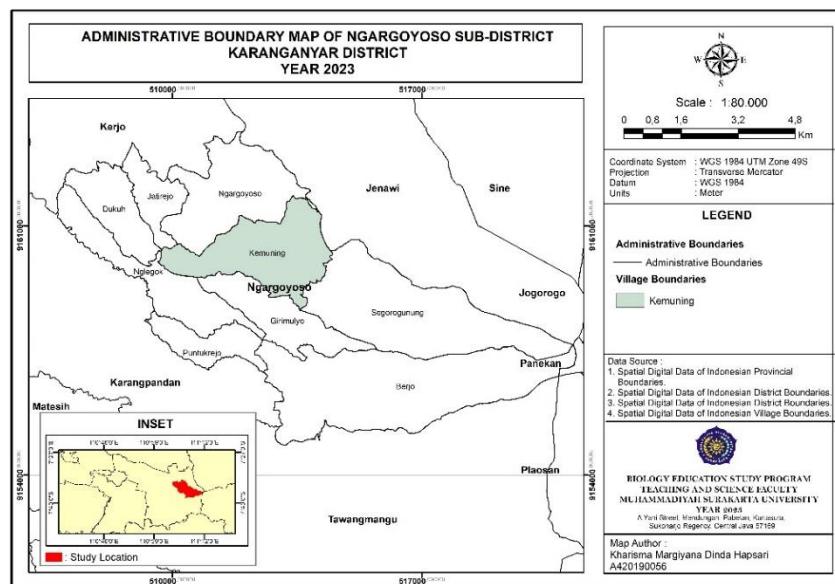


Figure 1. Map of Research Location

This research was conducted in Ngargoyoso District, Karanganyar Regency, Central Java. Ngargoyoso sub-district is divided into 9 villages, namely Kemuning, Ngargoyoso, Girimulyo, Berjo, Dukuh, Jatirejo, Nglegok, Puntukerjo, and Segorogunung. The research location taken from the 9 villages is Kemuning village because people's houses, tea factories, and tourist areas closest to tea plantations are Kemuning village. This region has an altitude of 1,114 m asl, with temperatures between 18 - 21°C. This research will be conducted in February – July 2023.

2.1.1. Observation and Sampling Techniques

The sampling technique used is the Purposive sampling method. The selection of respondents used purposive sampling by considering the respondents' knowledge of the tea plant, namely tea farmers, native residents of Ngargoyoso District, elders in the Ngargoyoso Kesamatan area, and the surrounding community. The data collection techniques used in this study were observation techniques, interview techniques, and documentation techniques. Observation techniques involve two components, namely the perpetrator and the object being observed. The observation technique carried out is to look at the village and look for reliable informants. The interview technique is carried out by asking questions to the resource persons to know the needs of users. Respondents with the criteria of women and men, aged 20 to 80 years, indigenous people and immigrants in the Ngargoyoso sub-district. The interview was conducted semi-structured which refers to the questionnaire guide. Interviews were conducted with local people to find out the use of parts of the tea plant. Documentation is carried out by collecting supporting documentation of research data needed in this study.

2.1.1.1. Data Analysis

Data analysis of the results of this study uses qualitative description analysis. Content analysis based on respondents' knowledge data on the benefits of a plant. Qualitative data is obtained from the results of community interviews on knowledge about tea plants, organs used, sources of acquisition, and how to use plants.

3. RESULTS AND DISCUSSION

3.1. Utilization of Tea Plants Based on Local Wisdom in Ngargoyoso District

From the results of observations and interviews with local people, the results of this study show that the level of preference for tea drinks and the benefits of tea in the Ngargoyoso area is described in the form of Figure 2

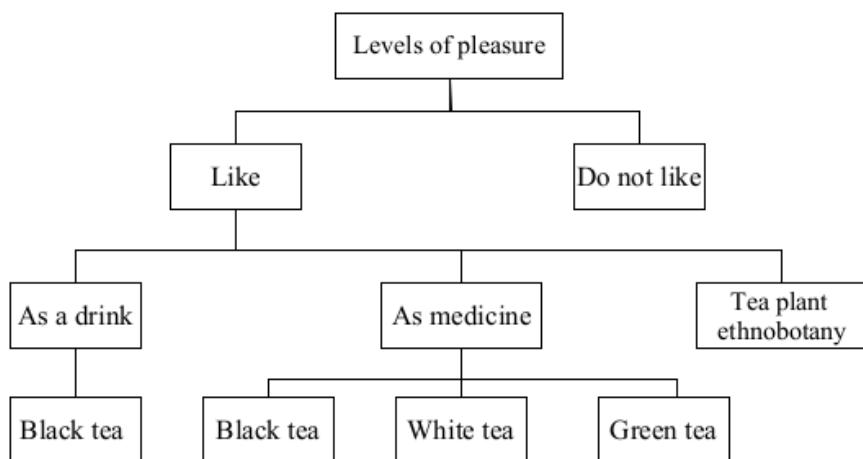


Figure 2. The Level of People's Liking For Tea Plants

Based on the picture, the level of liking to drink tea is divided into two benefits, namely as a daily drink and as a medicine. From 50 respondents, the level of liking is different. Presented picture 3 shows that there are 50 respondents with a level of tea liking, there are 96% who like to drink tea and 4% who don't like it. There are 2 benefits, namely as a drink and as a medicine. 74% out of 50 respondents chose tea plants as daily drinks and 26% used tea plants as medicine.

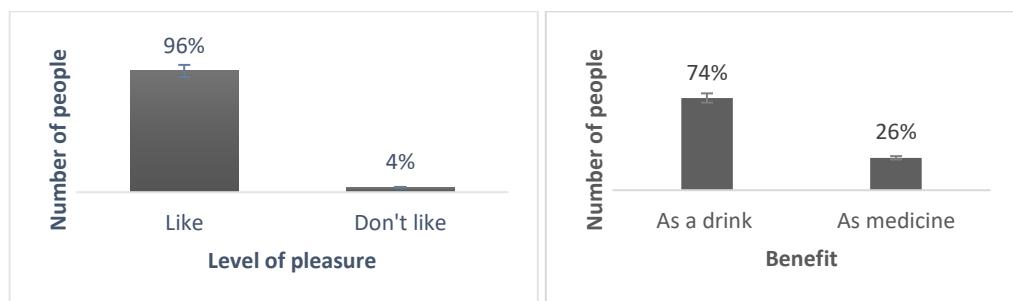


Figure 3. Number of People's answers The level of Liking and Benefits of Tea Plants

The most processed products from tea plants in Ngargoyoso District are tea drinks. People like tea drinks because they are easily obtained and pure from local plantations that have been processed and traded. Tea plantations in Ngargoyoso are mostly owned by PT. Rumpun teh Kemuning and a small part of private property. The tea drink that most people like is black tea. Black tea (Figure 4) is the most popular tea by the people of Ngargoyoso, in addition to daily drinks, black tea also has medicinal properties. The benefits of black tea as a medicine are maintaining low sugar levels, lowering cholesterol, and increasing endurance. The process of making black tea uses old leaves. Black tea contains compounds such as flavonoids, tannins, and caffeine.

Processed tea drinks in Ngargoyoso are not only black tea, there are white tea and green tea with each having medicinal benefits. White tea (Figure 4) is the best tea for medicine because it has high antioxidants compared to black tea and green tea. White tea has a selling power that is quite expensive because the process of making white tea can also affect the properties present in white tea. This is in line with research (Hayati, 2022) states that the processing and serving technique of white tea will greatly affect the effectiveness of white tea as a functional food or as a medicine.

White tea contains caffeine, flavonoid ,and phenolic compounds (Choiriyah, 2021). Processed white tea has benefits to prevent cancer, prevent heart disease, prevent osteoporosis, is good for oral and dental health, and stabilizes blood pressure. Judging from the health benefits of white tea including one of the functional foods. The process of making white tea uses young shoot leaves. According to (Choiriyah, 2021) White tea is harvested in the morning and the part taken is 1 bud on 1 part of the leaf.

Processed tea drinks as medicine as a further medicine are green tea (Figure 4). Green tea is most famous for its benefits as a weight loss or used as a diet companion drink. This can be seen in research (Nugroho, 2020) There was a decrease in weight of a man after being given green tea extract for 1 month. Apart from being a companion drink to the diet, green tea has medicinal benefits, namely to lower cholesterol, prevent diabetes, improve the digestive system, and prevent gingivitis. Green tea contains the main polyphenol and caffeine compounds in tea leaves. This is in line with research (Rahmanisa, 2016) Green tea contains polyphenolic compounds and caffeine. The process of making green tea uses young leaves.



Figure 4. a. Green tea; b. White tea; c. Home-owned black tea in Ngargoyoso

3.1.1. Ethobotanical Knowledge of Tea Plants in Ngargoyoso

The use of tea plants ethnobotanically in Ngargoyoso is not widely known. From table 1, there were 50 respondents for those who knew only 32% and those who did not know 68% (figure 5). Ethnobotany is the use of plants as benefits for everyday life. Presented table of 3 tea plant organs that can be used.

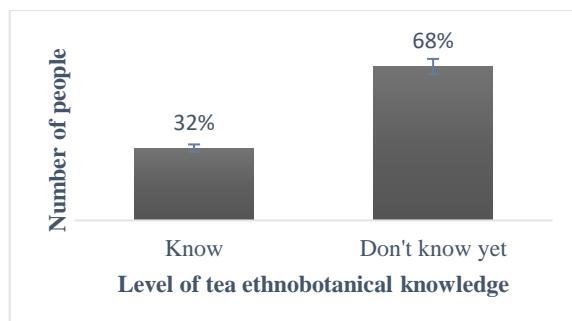


Figure 5. Knowledge Level of Tea Ethnobotany

Ethnobotany is the use of plants as benefits for everyday life. Presented in Table 1 of usable tea plant organs. Utilization of tea leaves other than as medicine and as a drink can be used as

natural compost. Old leaves (Figure 6) are leaves used as natural compost. Old fallen leaves in the soil can nourish the soil well. Part of the organ can be used in addition to the leaf, namely the stem. The stem part is divided into 2, namely the young stem (Figure 6) and the old stem. Young stems are used to mix tea drinks because young stems give the tea a strong aroma and flavor. Then the old stem part is not widely used because the tea plant has a long life span. Usually, old sticks are used for firewood for residents. The acquisition of old stems is usually at the time of pruning tea plants, pruning tea plants is done about once every 6 months to support new and good quality tea leaves.

Table 1. Tea Plant Organs That Can Be Used

No.	Tea Plant Organs	Special Uses
1	Young Leaves	Making green tea and white tea beverages
2	Old Leaves	Making black tea beverages and natural compost
3	Young Stems	Tea drink mixture
4	Old Trunk	Firewood

From Figure 5, as much as 32% of the people of Ngargoyoso District know the ethnobotanical aspects of the tea plant and 68% do not know the ethnobotanical aspects of the tea plant. The tea plants in Ngargoyoso can only be used as medicine, daily drinks, and firewood. The only used parts of the tea plant are the leaves and stems. The roots, seeds, and flowers of the tea plant cannot be used because from generations there is no benefit that is specific to this part. Therefore, the use of tea plants in Ngargoyoso, Karanganyar Regency, Central Java, has not had any special innovations and benefits.



Figure 6. a. Young Leaves; b. Old Leaves; c. Young Steams of Tea Plants

4. CONCLUSION

From the ethnobotanical aspect of tea plants, there are 96% of people who like tea drinks. As much as 74% is used for daily drinks and the rest is used as medicine. Public knowledge about the ethnobotanical aspects of tea plants is low because only 32% of people know about the ethnobotanical aspects of tea plant organ parts that can be used. The only parts of the tea plant that can be used are young leaves for making green tea, shoots or buds of young leaves for making white tea, old leaves for making black tea, young stems for tea mixtures, and old stems for firewood. This tea plant thrives at an altitude of 1,114 m asl.

5. REFERENCES

- Anjarsari, I. R. (2021). Pengaruh metode pemangkasan dan pendekatan hormonal terhadap analisis pertumbuhan tanaman teh klon GMB 7 pada periode pemetikan produksi. *Kultivasi*, 20(1), 62-71. <https://doi.org/10.24198/kultivasi.v20i1.31982>
- Azurianti, R. W. (2022). Kajian Hubungan Hara Tanah Terhadap Produktivitas Tanaman Teh Produktif Di Perkebunan Teh Pagar Alam Sumatra Selatan. *Jurnal Tanah dan Sumberdaya Lahan*, Azurianti, R. W., Athallah, F. N. F., & Priyono, S. (2022). Kajian Hubungan Hara Tanah Terhadap Produktivitas Tana9(1), 153-161. doi: 10.21776/ub.jtsl.2022.009.1.17
- Choiriyah, N. A. (2021). KOMPOSISI KIMIA, POTENSI ANTIOKSIDAN DAN ANTIMIKROBA SERTA MANFAAT KESEHATAN TEH PUTIH. *Jurnal Industri Hasil Perkebunan*, 16(2), 97-104. <http://dx.doi.org/10.33104/jihp.v16i2.6689>
- Fezih, F. N. (2018). Studi etnobotani tumbuhan obat di Desa Wonoharjo, Kabupaten Pangandaran, Jawa Barat. *Jurnal Prosiding Seminar Nasional Masyarakat Biodiversitas Indonesia*, 122-132. DOI: 10.13057/psnmbi/m040205
- Hayati, A. W. (2022). KANDUNGAN GIZI DAN MANFAAT TEH HERBAL. *uwais inspirasi indonesia*.
- Jain., S. (2018). Manual of Ethnobotany. India : Scientific Publisher.
- Juandi, R. (2020). Pengelolaan Usaha Perkebunan Berkelanjutan Terhadap Keberadaan Kearifan Lokal Pada Masyarakat Hukum Adat Suku Dayak Ngaju Di Kabupaten Seruyan Kalimantan Tengah. *Jurnal Hukum*, 1-10.
- Karina, N. (2022). Etnobotani Pemanfaatan Berbagai Jenis Pisang (*Musa spp*) Oleh Masyarakat Desa Makarti Kecamatan Tumijajar Kabupaten Tulang Bawang Barat. Lampung: Doctoral dissertation, UIN RADEN INTAN LAMPUNG.
- Kurniati, Y. D. (2022). Etnobotani Tanaman Pangan di Desa Cigedug Kabupaten Garut. *SAINTIFIK*, 8(2), 151-158. DOI:10.31605/saintifik.v8i2.340
- Mutmainnah, A. T. (2020). Keragaman Familia Tumbuhan Obat Masyarakat Kota Parepare Sulawesi Selatan. *bionature*, 21(2).
- Njatrijani, R. (2018). Kearifan Lokal Dalam Perspektif budaya Kota Semarang. . *Gema Keadilan*, 16-31. DOI: <https://doi.org/10.14710/gk.2018.3580>
- Nugroho, A. A. (2020). MANFAAT EKSTRAK TEH HIJAU TERHADAP PENURUNAN BERAT BADAN. *Jurnal Ilmiah Keperawatan dan Kesehatan Alkautsar (JIKKA)*, 1(1).
- Nuraeni., S. S. (2022). Kajian Etnobotani Tanaman Rempah Sebagai Bumbu, Obat, dan Kias. *Umbara*, 7(2), 27-38. DOI: <https://doi.org/10.24198/umbara.v7i2.39395>
- Nurchayati, N. &. (2019). Pengetahuan Lokal Tanaman Pangan dan Pemanfaatannya pada Masyarakat Suku Using Kabupaten Banyuwangi. *Biotropika: Journal of Tropical Biology*, 7(1), 11-21. <https://doi.org/10.21776/ub.biotropika.2019.007.01.02>
- Pebiana, N. P. (2020). Kajian Etnobotani Loloh dan Teh Herbal Lokal sebagai Penunjang Ekonomi Kreatif Masyarakat Desa Tradisional Penglipuran Kabupaten Bangli-Bali. *Bioma: Berkala Ilmiah Biologi*, 23(2), 91-99. DOI: <https://doi.org/10.14710/bioma.23.2.91-99>
- Rahimah, R. H. (2019). Kajian Etnobotani (Upacara Adat Suku Aceh Di Provinsi Aceh). *BIOTIK: Jurnal Ilmiah Biologi Teknologi dan Kependidikan*, 6(1), 53-58. <http://dx.doi.org/10.22373/biotik.v6i1.4045>
- Rahmanisa, S. &. (2016). Pengaruh ekstrak teh hijau terhadap penurunan berat badan pada remaja. *Jurnal Majority*, 5(2), 106-111.
- Robi, Y. &. (2019). Etnobotani rempah tradisional di desa empoto kabupaten sanggau kalimantan barat. *Jurnal Hutan Lestari*, 7(1). DOI: <http://dx.doi.org/10.26418/jhl.v7i1.31179>
- Rosniawaty, I. A. (2020). Studi ekofisiologis tanaman teh guna meningkatkan pertumbuhan,. *Jurnal Kultivasi*, 19(3), 1181-1188. DOI : <https://doi.org/10.24198/kultivasi.v19i3.26623>
- Safitri, I. A. (2018). Manajemen Pemangkas Tanaman Teh (*Camellia sinensis* (L.) O. Kuntze) di Unit Perkebunan Tambi, Jawa Tengah. *Buletin Agrohort*, 6(3), 344-353. DOI: <https://doi.org/10.29244/agrob.v6i3.21098>
- Silalahi, M. N. (2022). Kajian Etnobotani Tumbuhan Obat Oleh Masyarakat Lokal Etnis Batak Mandailing Di Desa Tanjung Julu, Kabupaten Mandailing Natal, Sumatra Utara. *AL-KAUNIYAH: Jurnal Biologi*, 5(1), 107-120.
- Syafitri, E. R. (2020). Studi Kepustakaan Teori Konseling Dialectical Behavior Therapy. *Jurnal BK Universitas Negeri Surabaya*, 11, 53-59.
- Tuty, A. A. (2020). Proses Dan Manfaat Teh. Yogyakarta: GUEPEDIA.
- Widana, I. N. (2021). Etnobotani Tabia bun (*Piper retrofractum* Vahl.) (Kajian Teoritik). *Jurnal Emasains: Jurnal Edukasi Matematika dan Sains*, 10, 2124. DOI: <https://doi.org/10.5281/zenodo.5472059>
- Widyastuti, I. B. (2021). Pengaruh Media pada Karakter Biokimia dan Keberhasilan Pencangkokan Tanaman Teh (*Camellia sinensis* L.(O.) Kuntze) pada Klon TRI 2025. *Jurnal Ilmu Pertanian Indonesia*, 26(1), 113-119. DOI: <https://doi.org/10.18343/jipi.26.1.113>