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Ethnopharmacy: Indonesian Madurese traditional medicine plant in Paseseh Village

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Abstract: An ethnopharmaceutical study on the use of medicinal plants in Paseseh Village, Tanjungbumi District, Bangkalan Madura Regency, East Java aims to determine the types and parts of the plants used, the benefits and methods of processing these plants. This research is qualitative research using purposive sampling and snowball sampling using questionnaires and open interviews with traditional healers. There were 62 types of plant products used as medicine. Identification was carried out using the Plan Snab application, and 3 plants were identified at LIPI Purwodadi Botanical Garden, namely: Nir-meniran (Deeringia amaranthoides (Lam)) Merr, Syaraf Kelabeng (L. Circinatum L), Kebiul/Tenglor (Caesalpinia sp.). Plant parts used: leaves, roots, stems, fruit, and flowers. There are sulfur stones/beto-belireng, and bricks/betoh as a concoction in medicine. The part of the plant that is widely used is the leaf (57%). The plant is used as a treatment for fever, stomach ache, and flu. Medicinal plants are processed by boiling, pounding, boiling/pounding, using immediately, burning, crushing, and extracting the sap. The most use of medicinal plants is boiled (61%). Plants are obtained by taking them around the house, buying them at the market, growing wild, and taking them from other villages. The way to get the most is to take it around the house (53%). The conclusion of this study resulted in an empirical inventory of the use of plants as traditional medicines that can be developed into phytopharmaca.
Keywords: Ethnopharmacy; Indonesian Madurese; Medicinal plants; Traditional medicine

INTRODUCTION

Indonesia is one of the countries with the most biodiversity. There are about 30,000 species of flora in Indonesian tropical forests (Elfahmi et al., 2014). Madura is one of the islands in Indonesia, that has a variety of flora and plants. These plants are widely known and used to maintain health and treat diseases. Knowledge of the manufacture of Madura's spices is inherited from time to time in a family, especially the royal family and its descendants. Drinking is introduced to children or their offspring from an early age and is more emphasized by women to take care of the body and maintain health. Madura juice is known primarily as a medicine to treat the body or to maintain health, and a small part as first aid in the treatment of a disease (Rachmawati, 2014). The island of Madura, through its compound, has the potential to accelerate the development of agriculture towards increased contributions to the increased incomes of the people now and in the future. Madura also has a reputation as one of the national spice producers whose production has been recognized nationally and even internationally (Nurlaila, 2021).

Madura's recipe comes from their ancestors, but some claim that they became spice makers after sickness and then dream about the recipe they made. Nevertheless, the ingredients or prescriptions of the spices produced are often unrecorded. A little bit of traditional medicine that documents the prescriptions they have. The limitation of knowledge and the fear that the prescription will be replicated by others are two of the reasons for the lack of such documentation.

Modernization of the culture that exists today, especially in the culture of medicine, can lead to the loss of the knowledge of traditional medicine that society possesses (Bodeker, 2000). The lack of documentation on the use of medicinal plants by certain communities makes it difficult to preserve traditional medicine (Rosita et al., 2007). Ethnopharmacy can be used to dig up local knowledge in specific communities about using plants as medicines. This study could enable research into the ingredients of traditional medicine and how they are used as cultural detectors in a particular community (Pieroni et al., 2005).

METHODS

The people of Tanjungbumi are still using a lot of traditional medicine, like in the village of Paseseh. But until now, there is still no data related to medicinal plants that are widely used as public medicine in the Tanjungbumi district of Bangkalan. Based on the above problem, ethnopharmaceutical studies will be conducted in the Bangkalan Prefecture district in Tanjungbumi village, Paseseh. This research is expected to preserve cultural heritage in terms of traditional medicine and also introduce traditional Madura medicine that is unknown to the public.

This research uses a combination of qualitative and quantitative research methods. This stage is also conducted in an open interview. The informant selection technique used in this early observation is the purposive sampling method, which is the informant selection technique with particular consideration, in this case, the person considered to be the most knowledgeable about medicinal plants (Mayasari, 2016). The characters chosen through this method to be interviewed are traditional therapists and massagers. Based on preliminary observations, the data of the prospective informant is known. After the initial observations, data on medicinal plants from traditional medicines is collected using interviews carried out with the method of snowball sampling, which is the technique of selecting informants based on the recommendations of key informants, in this case, dukun and massage makers. Information about future prospective information obtained from previous information (Mayasari, 2016) 2007). The interview technique was conducted using questionnaire media; based on the field studies carried out, informants provided information on the use of plants as medicines and continued with unstructured interviews.

RESULTS AND DISCUSSION

Based on the statistics provided by the Bangkalan district in 2017, the Tanjungbumi district covers an area of 67.49 km^2 and is home to a total of 14 villages with a population of 52,399 people (BPS, 2017). One of these villages is Paseseh, which is located in the Tanjungbumi district of Bangkalan on Madura Island. Madura Island is situated above the Java Islands and precisely above Surabaya on the world map. The distance between Paseseh Village and Surabaya is approximately 75 km, which can be covered by car in about 2 hours. Map of the location of the village of Paseseh district of Tanjungbumi Madura as in Figure 1.

Based on interviews conducted with (10) respondents, who are familiar with traditional medicine in the Paseseh village of Tanjungbumi district of Bangkalan, There are (62) varieties of plants used in conventional medicine. The portion of the plant used in medicine to treat a

disease, i.e., leaves, roots, stems, fruits, and flowers, has a percentage like Figure 2. The most cultivated part of the plant is 57% of the leaves. The leaves usually have high material availability. The diversity of secondary metabolites in the leaf ranges from non-polar compounds such as steroids and triterpenes to semi-polar compounds such as flavonoids to polar compounds such as polyphenols and glycosides or hydroxylated terpenoids (Saifudin, 2012). The use of leaves becomes more dominant interrelated because the leaves accumulate many secondary metabolite compounds that are useful as medicines, such as tannins, alkaloids, essential oils, and other organic compounds stored in vacuoles or additional tissues in leaves such as trichomes. There is a contention among some that leaves possess more characteristics than other plant parts.

Figure 1. Map of Indonesia: Data collection location of Paseseh village of Bangkalan, Madura, East Java, Indonesia (scale = 1:200).

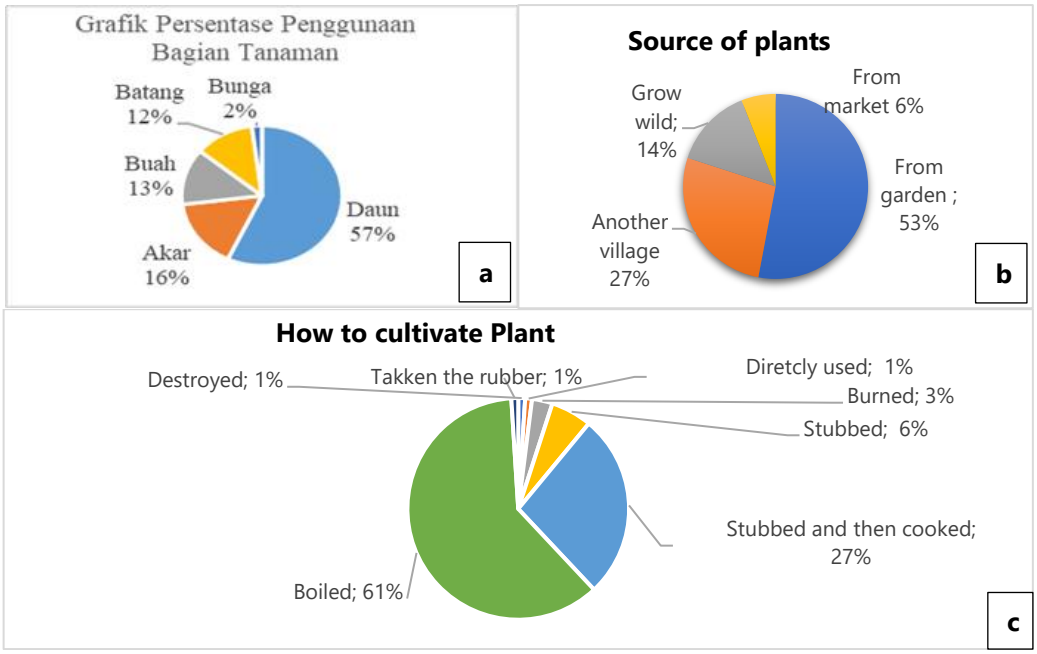

Figure 1. (a). Graph of Percentage Usage of Plant Parts for Traditional Medicine; (b) Graffic of Percentasae How to Obtain Plants; (c) Graphic of Plant Processing in Paseseh Village, Madura, Indonesia.

The methods of treatment include direct use, burning, damaging, boiling, crushing, and taking rubber. The most common treatment is boiling, which accounts for 61%. Boiling is the most effective way to use it, and besides being easy to do, it can also bore unwanted bacteria. The refining process needs to pay attention to the resistance of the active ingredient to heat to prevent damage to the bioactive compound. The plants used for the treatment are the most close to homes (53%), intentionally planted and grown, or grown wild (14%). Some plants are obtained from neighboring villages (27%), and some are purchased from the market (6%). The percentages can be shown in the graph in Figure 2 (a), (b), and (c).

One of the plants that is typical of the region is *Caesalpinia bonduc*, which is used to treat lung diseases. The main secondary metabolite components contained in *Caesalpinia bonduc* include alkaloids, flavonoids, saponins, tannins, and triterpenoids (Singh & Raghav, 2012). There are groups, not plant simplicities but come from rocks namely sulfur and brick. Sulfur and concrete stones and bricks are obtained from the market to treat compounds on the skin by applying them. Picture of such materials is shown in Figure 3 (a) and (b). As for the 62 plants used for treatment, they are listed in Table 1.

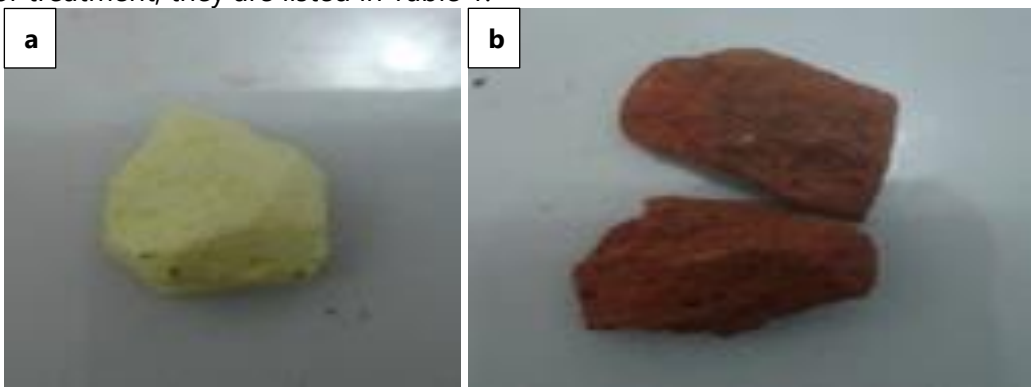

Figure 4. (a). Silverstone (b) Silverstone is a component of the medicinal material used in the village of Paseseh.

Table 1. List of Plants, Latin Names, Families, and Pictures; Parts of Medicinal and Mineral Plants Used by the Municipality of Paseseh, Tanjungbumi District of Bangkalan, Madura, East Java.

No.	Local Name	Scientific Name	Family	Source of Plant	Empirical function	Part of the plant
1.	JerukPurut/ JerukPorot	Citrus hystrix	Rutaceae	garden	Fever	Leaves
2.	Temu kunci/ Konceh	Boesenbergia rotunda	Zingiberaceae	garden	Swelling	Roots
3.	Kencur/ Kencor	Kaemferia galanga L.	Zingiberaceae	garden	Increase appetite	Roots
4.	Lengkuas/ Laos	Alpinia galanga	Zingiberaceae	garden	Itching	Roots
5.	Kunyit Putih/ Konye' Pote	Curcuma Amanda	Zingiberaceae	garden	Urticaria, itching, increase appetite, diarrhea	Roots
6.	Temu Gunung/ Mo gunong	Curcuma aeruginosa Roxb	Zingiberaceae	Another village	Mother's milk louncher	Roots

No.	Local Name	Scientific Name	Family	Source of Plant	Empirical function	Part of the plant
7.	Kunyit/ Konye'	Curcuma longa	Zingiberaceae	garden	Faver, itching, GIT, lung disease	Roots
8.	Tapak liman/ Talpaktana	Elephantopus scaber	Asteraceae Bryophyllum pinnatum	garden	Faver, itching, GIT, lung disease	leaves
9.	Cocor Bebek/ Corbibik	Kalanchoe pinata	Crassulaceae	garden	hemorrhoids	leaves
10.	Lidah Buaya/ Lidah buaya	Aloe vera	Xanthorrhoeaceae	garden	Heart disease	leaves
11.	Daun ungu / Deun kal-kalotek	Graptophyllum pictum	Acanthaceae	garden	Dizziness, nervous system.	leaves
12.	Daun Afrika/-	Vernonia amygdalina Del	Asteraceae	garden	Diabetes, hypertension	leaves
13.	Melati jepang/-	Pseuderatheum reticulatum	Acanthaceae	Garden	Heart disease, Magh	leaves
14.	Daun Adam dan hawa/ Sarapmera	Rhoeo discolor	Commelinaceae	Garden	hepatitis	leaves
15.	Sili-silicon/ Blu'ur	Deeringia amaranthoides (Lam)	Amaranthaceae	garden	fever, rash, ulceration, stomach ache	leaves
16.	Kesimbukan/ Kesembuken	Paederia scandals	Rubiaceae	growing wild	flatulence	leaves
17.	Daun sendok/ deun sendok	Plantago major	Plantaginaceae	growing wild	hepatitis	leaves
18.	Cabe Jawa/ Cabih alas	Piper retrofractum Vahl	Piperaceae	garden	Common cold	leaves
19.	Selasih/ Selase	Ocimum basilicum	Laminaceae	garden	flatulen	leaves
20.	Daun surahan/ saraf nor-nor	Peperomia pellucid	Piperaceae	Growing wild	headache	leaves
21.	Daun Katuk/ Gher-agher	Sauropus androgynus (L.) Merr.	Euphorbiaceae	garden	Stimulate breast milk	leaves
22.	Kumis Kucing/ KomisKoceng	Orthosipon aristatus	Lamiaceae	garden	Liver, and kidney disease	leaves
23.	Kapas hantu/ Kapas tenggih	Gossypium hirsutum L.	Malvaceae	garden	Fever,	leaves
24.	Meniran/ Nir-meniran	Phyllantus niruri L.	Phyllantaceae	Growing	Fever,anti diabet	leaves
25.	Dringau/ Be'es	Acous calamus L.	Liliopsida	Tumbuh liar	diarrhea	leaves
26.	Beluntas/ Beluntas	Plucea indica (L.) Less	Asteraceae	garden	Stimulate breast milk	leaves

No.	Local Name	Scientific Name	Family	Source of Plant	Empirical function	Part of the plant
27.	Daun Pacar/ Daun Pacar	Lacusonia inermis	Lythraceae	garden	Ulceratif, health reproduction	leaves
28.	Daun sirih / Sere	Piper betle L	Piperaceae	garden	kidney, health reproduction	leaves
29.	Asam Muda / Sennam	Tamarindus indica	Fabaceae	garden	Influenza, ulcerative, cough, health reproduction	leaves
30.	- / Saraf Kelabeng	Circinatum L	- (Proses identifikasi)	Growing wild	Feeling unwell	leaves
31.	Daun Secure/ Tesoro	Euphorbia antiquorum L.	Euphorbiaceae	garden	earache	leaves
32.	Biduri/ Deun Getta	Calotropis gigantea	Asclepiadaceae	garden	toothache	leaves
33.	Bidara/ Bukkol	Ziziphus mauritiana	Rhamnaceae	garden	Prickly heat	leaves
34.	Temuireng/ Mo ereng	Curcuma aeruginosca Roxb.	Zingiberaceae	market	Increase appetite	roots
35.	Jahe merah/ Jeimera	Zingiber officinale Rosc.	Zingiberales	Another village	Immune system	roots
36.	Mimba/ Mimbeh	Azadirachta ludica Juss.	Meliaceae	garden	Skin rash	leaves
37.	Sirsak/ Kemores	Annona muricata	Annonaceae	garden	Cough (baby), hypertension	leaves
38.	Pacar air/ car and	Impatiens balsanina L.	Balsaminaceae	Growing wild	Low back pain	leaves
39.	Pepaya/ kates	Carica papaya L.	Caricaceae	garden	Flatrulen (baby), diabetes	Leaves, roots
40.	Keji being / Peccabeling	Strobilanthes crispus Bl.	Acanthaceae	garden	Stomach disease	leaves
41.	Mengkudu / Koddu'	Morinda citrifolia L.	Rubiaceae	garden	Liver, heart, kidneys, heartburn, stomach disease, foot pain, diabetes.	Leaves, fruits
42.	Sarikaya/ Sarkajeh	Annona Squamosa L.	Annonaceae	garden	Children: fever	leaves
43.	Pare/Pariah	Momordica character	Cucurbitaceae	garden	cough.	leaves
44.	Kemangi/ Kemangeh	Ocimum sanctum	Lamiaceae	garden	Baby: cough, fever, ulcerative	leaves
45.	Rosela/ te-tean	Hibiscus sabdarifa L.	Malvaceae	Garden	Magh, food diet	flowers
46.	Pinang/ Penang	Areca catechu	Arecaceae	Market	Reproduction health	fruits

No.	Local Name	Scientific Name	Family	Source of Plant	Empirical function	Part of the plant
47.	Daun miana/ sarap celeng	Plectranthus scutellarioides (L.) R. Br.	Lamiaceae	Growing wild	Feeling unwell	leaves
48.	Jahe/Jeih	Zingiber officinale	Zingiberales	Another village	vomiting	roots
49.	Serai/ serai	Cymbopogon spireng	Poaceae	garden	Influenza, leg pain	leaves
50.	Jambu/jambu	Psidium guajava L.	Myrtaceae	garden	diarrhea	leaves
51.	Temulawak/ molabek	Curcuma xanthorriza Roxb.	Zingiberaceae	another	Kidney illness	roots
52.	Lidah mertua/ sarafolar	Sanseviera trifasciata prain	Asparagaceae	Garden	Hepatitis, felling unwel	leaves
53.	Binahong/ binahong	Anredera cordifolia (Ten) Steenis	Basellaceae	garden	Skin disease	leaves
54.	Kayu angin/ kajuh angin	Usnea barbata	Parmeliaceae	Market	Stomach acid	stems
55.	Adas/ adhes	Foeniculum vulgare	Apiaceae	Market	Stomach acid	seeds
56.	Kedawung/ kedabong	Parkia roxburgii G.Don.	Fabaceae	Market	Stomach acid	seeds
57.	Jung rahab/ dhengngateb	Baeckea frutescens L.	Myrtaceae	Market	Feeling unwell	seeds
58.	Anyang-anyang / Kajuhanyang	Elaeocarpus grandiflora J. E. Smith	Elaeocarpaceae	Market	Feeling unwell	stems
59.	Akar kayuangin/ akar kajuh angin	Usnea barbata	Parmeliaceae	Market	Feeling unwell	roots
60.	Kemukus/ Sa'angbulung	Pipe cubeba L.F	Piperaceae	market	Dyspepsia,	seeds
61.	Biji pinang/ Jikelleng	Areca catechu	Arecaceae	market	Feeling unwell	seeds
62.	Kebiul/ Tenglor	Caesalpinia bonduc	Caesalpiniaceae	Growing wild	Lung disease	leaves

The types of plants used in the healing system generally grow around people's homes using native planting techniques. Traditional healing communities (masseurs, herbal medicine makers, psychics, and herbalists) use traditional medicine passed down from their ancestors, but some get inspiration. Some of the equipment used to store and process drugs is shown in Figure 5. (a) and (b). At the time of plant identification, there were 3 plants identified by LIPI Purwodadi Botanical Gardens with Plant Identification Certificate Number No: 574/IPH.06/HM/ V/2019. The three plants are: *Deeringia amaranthoides* (Lam) Merr, Nerve Kelabeng *(Circinatum L),* Kebiul/Tenglor *(Caesalpinia sp.)*

Figure 5. (a) A place for storing medicinal ingredients; (b) Pepesans for grinding or grinding medicinal ingredients.

One of the plants that is typical of the area is Caesalpinia bonduc (kebiul) which is used to treat lung diseases. The main secondary metabolite components contained in Caesalpinia bonduc include alkaloids, flavonoids, saponins, tannins, and triterpenoids (Singh & Raghav, 2012). The acute toxicity test showed that 15 days of use once a day did not show any significant changes to the organs: heart, lungs, and kidneys (Sagar & Vidyasagar, 2010). This plant has the potential to treat chronic cystic fibrosis caused by *Pseudomonas aeroginosa* in the lungs (Arif et al., 2009). The potential as an anti-cancer in the Insilco test shows activity comparable to the patented compound that has been used (Iheagwam et al., 2019).

CONCLUSION

This research provides several conclusions: 62 types of plants are used as medicine for both internal and external use by the people of Paseseh Village, Bangkalan Regency, Madura, East Java, Indonesia. Apart from plants, they also use sulfur stone and bricks for treatment. The plant parts used are Leaves (57%), Roots (16%), Fruit (13%), Stems (12%), and Flowers (12%). Plants were obtained from around the house (53%), other villages (27%), growing wild (14%), and from the market (6%). Meanwhile, the processing itself is mostly boiled (61%), pounded/boiled (27%), pounded 6%, burned (3%), used straight away, and sap taken and crushed (1% each). There are 3 types of plants identified by LIPI Purwodadi Botanical Gardens, namely: Deeringia amaranthoides (Lam) Merr, Syaraf Kelabeng (Circinatum L), Kebiul/Tenglor (Caesalpinia sp.)

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This part presents the acknowledgment when it is required. It should not be numbered.

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