



ANALGESIC MEDICINAL PLANTS IN SOUTH BOGOR REGION, BOGOR, WEST JAVA, INDONESIA – AN ETHNOBOTANICAL STUDY

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ABSTRACT

Pain can be defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damages, or described in terms of such damages. Despite recent developments in pain therapy, the medical community still needs safe, effective, and potent analgesic drugs for the treatment of various pain conditions, especially chronic pain. This research aims to document and preserve the use of ethnomedicine to treat pain by people in the South Bogor Region, Bogor, West Java, Indonesia. Fieldwork was carried out from October to December 2024 using direct interviews, questionnaires, and discussions. Plant species are identified based on standard taxonomic methods, flower morphological characteristics, and where possible, using samples for comparison, as well as consultation with experts and the literature. The plant types obtained were grouped into families according to the Cronquist classification system. Plant names were checked against the Plant List (www.plantlist.org) and the International Plant Name Index (www.ipni.org). This research reports that 30 plant species are commonly used by people in the South Bogor Region to treat pain. Among the various plant parts used, leaves (56.7%) are most frequently used in making medicines, followed by rhizomes (16.7%), seed (10.0%), fruit (6.7%), stem, flower, and rind (respectively 3.3%). Meanwhile, the most frequently used preparation methods were decoction (83.3%) and infusion (16.7%). The results of this research confirm that people in the South Bogor Region still rely heavily on medicinal plants for their health care system, especially for the treatment of pain with the most frequently used parts of the leaves and their use in decoctions and infusions.

KEYWORDS: Traditional medicine, Ethnomedicinal plants, South Bogor Region, Analgesic.

INTRODUCTION

Pain is one of the common problems that occurs in society. This is a major factor in people coming to the doctor because pain interferes with the sufferer's social function and quality of life. Pain is defined as a sensory and emotional experience associated with tissue dysfunction.^[1] Despite the availability of adequate medications, pain remains the most challenging and devastating health problem affecting 80% of the adult population worldwide.^[2] Pain is considered a major clinical, social, and economic problem in most societies throughout the world.^[3] Non-steroidal anti-inflammatory drugs (NSAIDs), steroid drugs, and immune-suppressing drugs have long been used to relieve pain by people around the world. However, these drugs are often associated with severe side effects, such as gastrointestinal bleeding and stomach ulcers.^[4] Currently, research to obtain new analgesic drugs derived from natural ingredients continues to be carried out, one of which is through exploring active compounds

from natural ingredients, especially medicinal plants which have traditionally been used by people to treat pain in various regions in Indonesia.^[5-7] One of the Region in Indonesia that still uses herbal plants as an alternative treatment, especially to treat pain, is the South Bogor Region. This research aims to obtain detailed information about the use of herbal plants as an alternative therapy for pain in South Bogor Region, Bogor, West Java, Indonesia using a field survey method.

MATERIALS AND METHODS

Study area

South Bogor is located in Bogor Regency, West Java, Indonesia, with an area of 30.50 km². This area has an altitude of 300 meters above sea level with an average maximum air temperature of 29°C and a minimum of 22°C. Moreover, it is located between 06°37'8" South Latitude and 106°48'28" East Longitude. This region is a tropical climate area that is mostly inhabited by

Sundanese tribes (98%) and other tribes (2%). Vegetation in the study area is in humid conditions with an average rainfall of 4,000 mm/year.

Data collection

An extensive field survey was carried out to obtain information about medicinal plants from the Sundanese tribe in the study area. To document existing information about medicinal plants from tribal practitioners, several field visits were conducted from October to December 2024 in the South Bogor Region, Bogor, West Java, Indonesia. During the research, ethnomedicinal information was collected from middle-aged and older tribal practitioners in their local language (Sundanese), through direct interviews, questionnaires, and discussions. Information on local names of plants, plant parts used, preparation methods and administration (e.g., infusion, paste, juice and decoction) of all collected ethnomedicinal plants was recorded during the survey period.

Botanical identification

Plant species are identified based on standard taxonomic methods, flower morphological characteristics, and where possible, using samples for comparison, as well as consultation with experts and the literature.^[8] The plant types obtained were grouped into families according to

the Cronquist classification system, except for Pteridophyta and Gymnospermae.^[9] Plant names were checked against the Plant List (www.plantlist.org) and the International Plant Name Index (www.ipni.org).

Ethics statement

All participants provided verbal consent before the interview and gave consent to publish the information they provided.

RESULTS AND DISCUSSION

This research revealed that 30 plant species are commonly used by local people to treat pain (Table 1). This shows that the study location is affordable in terms of biodiversity. Among the various plant parts used, leaves (56.7%) are most frequently used in making medicines, followed by rhizomes (16.7%), seed (10.0%), fruit (6.7%), stem, flower, and rind (respectively 3.3%). The use of leaves is reported to be easier to prepare and easier to extract active substances from them for treatment. At the same time, leaves have less effect on the mother plant.^[10] Meanwhile, the most frequently used preparation methods were decoction (83.3%) and infusion (16.7%). These results are in line with previous research which reported that the forms of traditional medicine most widely used by the community were decoctions and infusions.^[8]

Table 1: Ethnomedicinal plants, local name, part used, mode of Administration and Dosage uses in South Bogor, Bogor, West Java, Indonesia.

No	Species	Family	Local name	Parts used	Mode of administration	Dosage of use
1	<i>Allium sativum</i> L.	Alliaceae	Bawang Putih	Rhizome	Infusion	25 grams once a day
2	<i>Alpinia purpurata</i> K. Schum	Zingiberaceae	Lengkuas	Rhizome	Decoction	150 grams once a day
3	<i>Andrographis paniculata</i> Nees	Acanthaceae	Sambiloto	Leaf	Decoction	75 grams once a day
4	<i>Annona muricata</i> L.	Annonaceae	Sirsak	Leaf	Decoction	100 grams once a day
5	<i>Anredera cordifolia</i> (Ten.) Steenis	Basellaceae	Binahong	Leaf	Decoction	35 grams once a day
6	<i>Averrhoa bilimbi</i> L.	Oxalidaceae	Belimbing Wuluh	Leaf	Decoction	25 grams once a day
7	<i>Carica papaya</i> L.	Caricaceae	Pepaya	Seed	Decoction	100 grams once a day
8	<i>Cinnamomum verum</i> J.Presl	Lauraceae	Kayu Manis	Stem	Decoction	10 grams once a day
9	<i>Clitoria ternatea</i> L.	Fabaceae	Telang	Flower	Decoction	400 grams once a day
10	<i>Coleus atropurpureus</i> L. Benth	Lamiaceae	Jawer Kotok	Leaf	Decoction	200 grams once a day
11	<i>Curcuma longa</i> L.	Zingiberaceae	Kunyit	Rhizome	Infusion	200 grams once a day
12	<i>Eleutherine palmifolia</i> (L.) Merr	Iridaceae	Bawang Dayak	Leaf	Decoction	20 grams once a day
13	<i>Garcinia mangostana</i> L.	Clusiaceae	Manggis	Rind	Infusion	200 grams once a day
14	<i>Gynura divaricata</i> DC.	Asteraceae	Daun Dewa	Leaf	Decoction	100 grams once a day

15	<i>Jatropha gossypifolia</i> L.	Euphorbiaceae	Jarak	Leaf	Decoction	150 grams once a day
16	<i>Kaempferia galanga</i> L.	Zingiberaceae	Kencur	Rhizome	Infusion	150 grams once a day
17	<i>Mimosa pudica</i> L.	Fabaceae	Putri Malu	Leaf	Decoction	100 grams once a day
18	<i>Momordica charantia</i> L.	Cucurbitaceae	Pare	Leaf	Decoction	100 grams once a day
19	<i>Morinda citrifolia</i> L.	Rubiaceae	Mengkudu	Fruit	Infusion	80 grams once a day
20	<i>Moringa oleifera</i> Lamk.	Moringaceae	Kelor	Leaf	Decoction	250 grams once a day
21	<i>Myristica fragrans</i> Houtt.	Myristicaceae	Pala	Seed	Decoction	50 grams once a day
22	<i>Nigella sativa</i> L.	Ranunculaceae	Jinten Hitam	Seed	Decoction	250 grams once a day
23	<i>Orthosiphon aristatus</i> (Blume) Miq.	Lamiaceae	Kumis Kucing	Leaf	Decoction	100 grams once a day
24	<i>Phaleria macrocarpa</i> (Scheff.) Boerl)	Thymelaceae	Mahkota Dewa	Fruit	Decoction	150 grams once a day
25	<i>Physalis angulata</i> L.	Solanaceae	Cecendet	Leaf	Decoction	10 grams once a day
26	<i>Piper betle</i> L.	Piperaceae	Sirih	Leaf	Decoction	20 grams once a day
27	<i>Sida rhombifolia</i> L.	Malvaceae	Sidaguri	Leaf	Decoction	50 grams once a day
28	<i>Terminalia catappa</i> L.	Combretaceae	Ketapang	Leaf	Decoction	10 grams once a day
29	<i>Tinospora crispa</i> L.	Menispermaceae	Baratawali	Leaf	Decoction	20 grams once a day
30	<i>Zingiber officinale</i> Rosc.	Zingiberaceae	Jahe	Rhizome	Decoction	150 grams once a day

CONCLUSIONS

The results of this research confirm that people in the South Bogor Region still rely heavily on medicinal plants for their health care system, especially for the treatment of pain with the most frequently used parts of the leaves and their use in decoctions and infusions.

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