



**AN ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS WITH ANTI-
INFLAMMATORY EFFECTS IN THE PABUARAN REGION, SUBANG, WEST JAVA,
INDONESIA**

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ABSTRACT

Unpleasant side effects associated with prolonged use of current anti-inflammatory drugs have necessitated a need for new drugs with limited side effects. This research aims to document and preserve the use of ethnomedicinal to treat inflammation by communities in the Pabuaran Region, Subang, West Java, Indonesia. Fieldwork was carried out from May to June 2025 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 there are 30 plant species commonly used by people in the Pabuaran Region for inflammation treatment. Among the various plant parts used, leaves (63.3%) are most frequently used in making medicines, followed by rhizomes (20%), fruit (10%), stems, and rhizomes (3.3% respectively). Meanwhile, the preparation methods most frequently used were decoction (53.3%) and infusion (46.7%). The results of this research confirm that people in the Pabuaran Region still rely heavily on medicinal plants for their health care system, especially for the treatment of inflammation with the most frequently used parts of the leaves and their use in decoctions and infusions.

KEYWORDS: Traditional medicine, Ethnomedicinal plants, Pabuaran Region, Anti-inflammatory.

INTRODUCTION

Inflammation is a defensive mechanism triggered by harmful foreign stimuli, such as pathogens, viruses, dust particles, irritants, and damaged cells, to initiate healing.^[1,2] It comprises various steps, starting with an induction phase, continuing with a peak of inflammation, and ending with the resolution phase.^[3] Induction phase is needed for effective host defense. It is caused due to external and endogenous noxious stimuli resulting from mechanical, chemical, or biological cell destruction.^[4] The resolution phase is necessary for reducing inflammation and restoring cell homeostasis after removing the noxious stimuli. Exaggerated immune responses such as human leukocyte antigen-B27 in arthritis, nucleotide-binding oligomerization domain-2, and interleukin-10-R mutations are hereditary factors that can override suitable resolution mechanisms.^[5] The coordinated activity of mediators and effector cells causes inflammation. Cytokines are responsible for

inflammation.^[6] They are characterized as proinflammatory cytokines, namely, interleukin- (IL-)1 β , IL-6, and tumor necrosis factor- α , and the anti-inflammatory cytokines, namely, IL-1R α , IL-4, IL-10, and transforming growth factor- β 1.^[7] Proinflammatory cytokines enhance systemic infection and initiate an immune response to disease, whereas anti-inflammatory cytokines counteract these effects to reduce inflammation and promote healing.^[8] Also, inflammation promotes and regulates many biological responses such as apoptosis, necrosis, and autophagy caused due to oxidative stress.^[9] Oxidative stress and inflammation are linked pathophysiological events; mechanisms are evident in various diseases, including irritable bowel syndrome, inflammatory bowel disease, and ulcerative colitis.^[10] The presence of inflammatory cells leads to the nitration and oxidation of large molecules such as proteins, lipids, DNA, and RNA. This process generates numerous free radicals, including reactive oxygen

species (ROS).^[11] The proinflammatory cytokines, such as IL-1, IL-18, TNF- α , and p38 mitogen-activated protein kinases (MAPK), are primarily involved in creating ROS, which leads to oxidative stress.^[12] Currently, research to obtain new anti-inflammatory drugs derived from natural materials is continuing, one of which is through the exploration of active compounds from natural materials, especially medicinal plants that have traditionally been used by communities to treat inflammation in various regions in Indonesia.^[13-15] One of the Region that still uses herbal plants as an alternative treatment for inflammation is Pabuaran Region. This research aims to obtain detailed information about the use of herbal plants for alternative therapy for inflammation in Pabuaran Region, Subang, West Java, Indonesia using a field survey method.

MATERIALS AND METHODS

Study Area

Pabuaran is located in Subang Regency, West Java, Indonesia, with an area of 75.37 km². This area has an altitude of 50 meters above sea level with an average maximum air temperature of 31°C and a minimum of 21°C. Moreover, it is located between 06°24'35" South Latitude and 107°35'12" East Longitude. This region is a tropical climate area that is mostly inhabited by Sundanese tribes (90%) and other tribes (10%). Vegetation in the study area is in humid conditions with an average rainfall of 2,000 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 May to June 2025 in the Pabuaran Region, Subang, 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 routes (e.g., infusion, paste, juice and decoction) of all ethnomedicinal plants collected were 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.^[16] The plant types obtained were grouped into families according to the Cronquist classification system, except for Pteridophyta and Gymnospermae.^[17] 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 inflammation (Table 1). This shows that the study location is affordable in terms of biodiversity. Among the various plant parts used, leaves (63.3%) are most frequently used in making medicines, followed by rhizomes (20%), fruit (10%), stems, and rhizomes (3.3% respectively). 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.^[18] Meanwhile, the preparation methods most frequently used were decoction (53.3%) and infusion (46.7%). 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.^[16]

Table 1: Ethnomedicinal plants, local name, part used, mode of administration, and dosage uses in Pabuaran, Subang, West Java, Indonesia.

No	Species	Family	Local name	Parts used	Mode of administration	Dosage of use
1	<i>Allium cepa</i> L.	Amaryllidaceae	Bawang Bombai	Rhizome	Decoction	10 grams once a day
2	<i>Allium sativum</i> L.	Alliaceae	Bawang Putih	Rhizome	Infusion	10 grams once a day
3	<i>Alpinia galanga</i> L.	Zingiberaceae	Lengkuas	Rhizome	Decoction	20 grams once a day
4	<i>Annona muricata</i> L.	Annonaceae	Sirsak	Leaf	Infusion	100 grams once a day
5	<i>Annona squamosa</i> L.	Annonaceae	Srikaya	Leaf	Decoction	100 grams once a day
6	<i>Averrhoa carambola</i> L.	Oxalidaceae	Belimbing	Fruit	Infusion	150 mL once a day
7	<i>Centella asiatica</i> L.	Apiaceae	Pegagan	Leaf	Decoction	50 grams once a day
8	<i>Cinnamomum verum</i> J.Presl	Lauraceae	Kayu Manis	Stem	Decoction	100 grams once a day
9	<i>Curcuma longa</i> L.	Zingiberaceae	Kunyit	Rhizome	Infusion	150 grams once a day
10	<i>Cymbopogon nardus</i>	Poaceae	Sereh Wangi	Leaf	Infusion	100 grams once a day
11	<i>Durio zibethinus</i> Murr.	Bombacaceae	Durian	Leaf	Infusion	150 grams once a day
12	<i>Elephantopus scaber</i> L.	Asteraceae	Tapak Liman	Leaf	Decoction	100 grams once a day
13	<i>Garcinia mangostana</i> L.	Clusiaceae	Manggis	Rind	Infusion	80 mL once a day

14	<i>Kaempferia galanga</i> L	Zingiberaceae	Kencur	Rhizome	Infusion	250 grams once a day
15	<i>Momordica charantia</i> L.	Cucurbitaceae	Pare	Leaf	Decoction	30 grams once a day
16	<i>Morinda citrifolia</i> L.	Rubiaceae	Mengkudu	Fruit	Infusion	120 grams once a day
17	<i>Moringa oleifera</i> Lamk.	Moringaceae	Kelor	Leaf	Decoction	150 grams once a day
18	<i>Morus</i> L.	Moraceae	Murbei	Leaf	Infusion	60 grams once a day
19	<i>Musa paradisiaca</i> L.	Musaceae	Pisang	Leaf	Infusion	50 grams once a day
20	<i>Ocimum basilicum</i> L.	Lamiaceae	Kemangi	Leaf	Decoction	390 grams once a day
21	<i>Orthosiphon stamineus</i> Benth	Lamiaceae	Kumis Kucing	Leaf	Infusion	400 mL once a day
22	<i>Pandanus amaryllifolius</i> Roxb.	Pandanaceae	Pandan Wangi	Leaf	Decoction	100 grams once a day
23	<i>Phaleria macrocarpa</i> (Scheff.) Boerl	Thymelaceae	Mahkota Dewa	Fruit	Decoction	30 grams once a day
24	<i>Phyllanthus acidus</i> (L.) Skeels	Phyllanthaceae	Cermai	Leaf	Infusion	50 grams once a day
25	<i>Phyllanthus niruri</i> L.	Phyllanthaceae	Meniran	Leaf	Decoction	50 grams once a day
26	<i>Piper betle</i> L.	Piperaceae	Sirih	Leaf	Decoction	30 grams once a day
27	<i>Psidium guajava</i> L.	Myrtaceae	Jambu biji	Leaf	Decoction	20 grams once a day
28	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Jamblang	Leaf	Infusion	150 grams once a day
29	<i>Syzygium polyanthum</i> (Wight) Walpers	Myrtaceae	Salam	Leaf	Decoction	50 grams once a day
30	<i>Zingiber officinale</i> Rosc.	Zingiberaceae	Jahe	Rhizome	Decoction	200 grams once a day

CONCLUSIONS

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

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