EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 12
Issue: 10
Year: 2025

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

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DOI: https://doi.org/10.5281/zenodo.17310589

Article Received on 25/08/2025 **Article Revised on 14/09/2025** **Article Accepted on 05/10/2025**

ABSTRACT
Inflammation can be said to be one of the body's reaction to tissue damage or infection and is typically characterized by redness, swelling, heat, and pain. This research aims to document and preserve the use of ethnomedicine to treat inflammation by people in the Ciater, 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 30 plant species are commonly used by people in the Ciater to treat inflammation. 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 Ciater 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, Ciater Region, Anti-inflammatory.

INTRODUCTION
Inflammation is a biological defense mechanism that enables living cells to protect themselves against diseases such as bacteria, fungi, viruses, physical agents, and defective immune.[1,2] Of course, inflammation may be acute (initial inflammation) or chronic (out of proportion of protection damage) types.[3] Factors such as redness, swelling, pain, loss of function of cells, and heat are common symptoms of inflammation.[4] Human living cells naturally develop protective mechanisms in response to body inflammation due to microbial infections, mechanical injuries, and burns stimuli.[5] Both acute and chronic inflammatory responses play a significant role in the natural defense mechanisms of the human body's inborn immune system to maintain human health.[6] Its main aim is to stimulate living cells to eliminate harmful agents and remove damaged tissues to heal the affected parts. The inflammatory response is effective by secretion of different mediators responsible for the initiation, progression, persistence, regulation, and resolution of inflammation effects.[7] During the inflammatory process, reactive oxygen species (ROS), reactive nitrogen species (RNS), tumor necrosis factor-α (TNF-α), interleukins (ILs), cyclooxygenase-1 (COX-1), and cyclooxygenase-2 (COX-2) are highly produced in host cells as inflammatory bio-indicators.[8] Even though several models are applied to evaluate the anti-inflammatory potential of phytochemicals, protein denaturation and erythrocyte membrane stability were reported as the two mostly used assays for in vitro studies.[2] Body inflammation is regulated by numerous signaling pathways forming a complex system. Therefore, drug development has focused on the key targets that antagonized, neutralized, or blocked particular products such as enzyme inhibiting activities by imitating potential phytochemicals used as anti-inflammatory drugs.[9] For the treatment of inflammation, people have been using non-steroidal anti-inflammatory drugs (NSAIDs) as medicines. However, the increasing side

effects such as heart attack and strokes due to these drugs are the main need to replace synthetic drugs with minimal risk-causing plant-based medicines.[10] 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.[11,13] One of the Region that still uses herbal plants as an alternative treatment for inflammation is Ciater Region. This research aims to obtain detailed information about the use of herbal plants for alternative therapy for inflammation in Ciater Region, Subang, West Java, Indonesia using a field survey method.

MATERIALS AND METHODS

Study Area

Ciater is located in Subang Regency, West Java, Indonesia, with an area of 47.18 km^2. This area has an altitude of 1800 meters above sea level with an average maximum air temperature of 26°C and a minimum of 20°C. Moreover, it is located between 06°42′48″ South Latitude and 107°40′10″ 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 May to June 2025 in the Ciater 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 (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.[14] The plant types obtained were grouped into families according to the Cronquist classification system, except for Pteridophyta and Gymnospermae.[15] 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 (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.[16] 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.[14]

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

No	Species	Family	Local name	Parts used	Mode of administration	Dosage of use
1	Allium sativum L.	Alliaceae	Bawang Putih	Rhizome	Infusion	50 grams once a day
2	Alpinia purpurata K. Schum	Zingiberaceae	Lengkuas	Rhizome	Decoction	100 grams once a day
3	Andrographis paniculata Nees	Acanthaceae	Sambiloto	Leaf	Decoction	100 grams once a day
4	Annona muricata L.	Annonaceae	Sirsak	Leaf	Decoction	150 grams once a day
5	Anredera cordifolia (Ten.) Steenis	Basellaceae	Binahong	Leaf	Decoction	50 grams once a day
6	Averrhoa bilimbi L.	Oxalidaceae	Belimbing Wuluh	Leaf	Decoction	75 grams once a day
7	Carica papaya L.	Caricaceae	Pepaya	Seed	Decoction	150 grams once a day
8	Cinnamomum verum J.Presl	Lauraceae	Kayu Manis	Stem	Decoction	20 grams once a day

9	Clitoria ternatea L.	Fabaceae	Telang	Flower	Decoction	300 grams once a day
10	Coleus atropurpureus L. Benth	Lamiaceae	Jawer Kotok	Leaf	Decoction	250 grams once a day
11	Curcuma longa L.	Zingiberaceae	Kunyit	Rhizome	Infusion	250 grams once a day
12	Eleutherine palmifolia (L.) Merr	Iridaceae	Bawang Dayak	Leaf	Decoction	50 grams once a day
13	Garcinia mangostana L.	Clusiaceae	Manggis	Rind	Infusion	150 grams once a day
14	Gynura divaricata DC.	Asteraceae	Daun Dewa	Leaf	Decoction	150 grams once a day
15	Jatropha gossypiifolia L.	Euphorbiaceae	Jarak	Leaf	Decoction	200 grams once a day
16	Kaempferia galanga L.	Zingiberaceae	Kencur	Rhizome	Infusion	200 grams once a day
17	Mimosa pudica L.	Fabaceae	Putri Malu	Leaf	Decoction	150 grams once a day
18	Momordica charantia L.	Cucurbitaceae	Pare	Leaf	Decoction	150 grams once a day
19	Morinda citrifolia L.	Rubiaceae	Mengkudu	Fruit	Infusion	100 grams once a day
20	Moringa oleifera Lamk.	Moringaceae	Kelor	Leaf	Decoction	200 grams once a day
21	Myristica fragrans Houtt.	Myristicaceae	Pala	Seed	Decoction	100 grams once a day
22	Nigella sativa L.	Ranunculaceae	Jinten Hitam	Seed	Decoction	200 grams once a day
23	Orthosiphon aristatus (Blume) Miq.	Lamiaceae	Kumis Kucing	Leaf	Decoction	150 grams once a day
24	Phaleria macrocarpa (Scheff.) Boerl)	Thymelaceae	Mahkota Dewa	Fruit	Decoction	150 grams once a day
25	Physalis angulata L.	Solanaceae	Cecendet	Leaf	Decoction	50 grams once a day
26	Piper betle L.	Piperaceae	Sirih	Leaf	Decoction	50 grams once a day
27	Sida rhombifolia L.	Malvaceae	Sidaguri	Leaf	Decoction	50 grams once a day
28	Terminalia catappa L.	Combretaceae	Ketapang	Leaf	Decoction	50 grams once a day
29	Tinospora crispa L.	Menispermaceae	Baratawali	Leaf	Decoction	20 grams once a day
30	Zingiber officinale Rosc.	Zingiberaceae	Jahe	Rhizome	Decoction	200 grams once a day

CONCLUSIONS

The results of this research confirm that people in the Ciater 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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