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AN ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS WITH ANTI-ULCERATIVE COLITIS EFFECTS IN THE PEDES REGION, KARAWANG, WEST JAVA, INDONESIA

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ABSTRACT

Ulcerative colitis, a chronic inflammatory bowel disease, is driven by dysregulated immune responses and persistent intestinal inflammation. This research aims to document and preserve the use of ethnomedicinal to treat ulcerative colitis by communities in the Pedes Region, Karawang, West Java, Indonesia. Fieldwork was carried out from April to May 2026 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 Pedes Region for ulcerative colitis 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 Pedes Region still rely heavily on medicinal plants for their health care system, especially for the treatment of ulcerative colitis with the most frequently used parts of the leaves and their use in decoctions and infusions.

KEYWORDS: Traditional medicine, Ethnomedicinal plants, Pedes Region, Ulcerative colitis.

INTRODUCTION

Ulcerative colitis (UC) is a common chronic inflammatory disease of the large intestine with unknown etiology.[1] It is characterized by erosions of the colon and rectal mucosa with the development of tiny open sores or ulcers, with no segments of normal tissue.[2] Increases in certain inflammatory mediators and appearance of signs of oxidative stress are among the pathological findings associated with UC.[3] The aim of treatment of UC is to maintain remission, reduce complications and improve quality of life. Important therapeutic achievement was obtained >15 years ago by the introduction of biological therapies such as the anti-tumor necrosis factor alpha (anti-TNF-α) and monoclonal antibodies.[4] However, the high cost of biological drugs and their patent expiration limit their use.[5] In addition, the use of immunosuppressive treatment especially steroids is risky particularly in patients with viral hepatitis and/or bacterial infections.[6] Therefore, there is a growing need for effective and safe therapeutic agents for the treatment of UC. Alternative therapy for many diseases depends on natural products.[7] Currently, research to obtain new anti-ulcerative colitis 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 ulcerative colitis in various regions in Indonesia.[8-10] One of the Region that still uses herbal plants as an alternative treatment for ulcerative colitis is Pedes

Region. This research aims to obtain detailed information about the use of herbal plants for alternative therapy for ulcerative colitis in Pedes Region, Karawang, West Java, Indonesia using a field survey method.

MATERIALS AND METHODS

Study Area

Pedes is located in Karawang Regency, West Java, Indonesia, with an area of 60.84 km^2. This area has an altitude of 5 meters above sea level with an average maximum air temperature of 31°C and a minimum of 28°C (humidity: approximately 74%). Moreover, it is located between 06°05′42″ South Latitude and 107°22′08″ East Longitude. This area is a tropical climate area that is mostly inhabited by Sundanese tribes (80%) and other tribes (20%). Vegetation in the study area is in humid conditions with an average rainfall of 2,100 mm/year.

Data Collection

An extensive field survey was conducted to gather information on medicinal plants traditionally used by the Sundanese community in the study area. Data collection involved several field visits carried out from April to May 2026 in the Pedes Region, Karawang, West Java, Indonesia. Ethnomedicinal information was obtained from middle-aged and elderly traditional practitioners through direct interviews, questionnaires, and discussions conducted in their local language, Sundanese. The information documented included the local names of medicinal plants, the plant parts utilized, preparation techniques, and routes of administration, such as infusion, paste, juice, and decoction. All relevant data on the medicinal plants identified during the survey were systematically recorded for further analysis.

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.[11] The plant types obtained were grouped into families according to the Cronquist classification system, except for Pteridophyta and Gymnospermae.[12] 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

Ulcerative colitis (UC) is a chronic, relapsing inflammatory bowel disease characterized by inflammation of the colonic mucosa, epithelial barrier dysfunction, immune dysregulation, and oxidative stress. The pathogenesis of UC involves interactions among genetic susceptibility, environmental factors, intestinal microorganisms, and abnormal immune responses. Consequently, therapeutic approaches targeting multiple pathological mechanisms, including inflammatory signaling, oxidative injury, and intestinal barrier disruption, are of considerable research interest.[13-15] This research revealed that 30 plant species are commonly used by local people to treat inflammation (Table 1). 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%).

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

No	Species	Family	Local name	Parts used	Mode of administration	Dosage of use
1	*Allium cepa* L.	Amaryllidaceae	Bawang Bombai	Rhizome	Decoction	20 grams once a day
2	*Allium sativum* L.	Alliaceae	Bawang Putih	Rhizome	Infusion	10 grams once a day
3	*Alpinia galanga* L.	Zingiberaceae	Lengkuas	Rhizome	Decoction	50 grams once a day
4	*Annona muricata* L.	Annonaceae	Sirsak	Leaf	Infusion	10 grams once a day
5	*Annona squamosa* L.	Annonaceae	Srikaya	Leaf	Decoction	150 grams once a day
6	*Averrhoa carambola* L.	Oxalidaceae	Belimbing	Fruit	Infusion	10 mL once a day
7	*Centella asiatica* L.	Apiaceae	Pegagan	Leaf	Decoction	50 grams once a day
8	*Cinnamomum verum* J.Presl	Lauraceae	Kayu Manis	Stem	Decoction	10 grams once a day
9	*Curcuma aeruginosa* Roxb.	Zingiberaceae	Temu Ireng	Rhizome	Infusion	2 grams once a day
10	*Cymbopogon nardus*	Poaceae	Sereh Wangi	Leaf	Infusion	10 grams once a day
11	*Durio zibethinus* Murr.	Bombacaceae	Durian	Leaf	Infusion	100 grams once a day
12	*Elephantopus scaber* L.	Asteraceae	Tapak Liman	Leaf	Decoction	10 grams once a day
13	*Garcinia mangostana* L.	Clusiaceae	Manggis	Rind	Infusion	80 mL once a day
14	*Kaempferia galanga* L	Zingiberaceae	Kencur	Rhizome	Infusion	200 grams once a day
15	*Momordica charantia* L.	Cucurbitaceae	Pare	Leaf	Decoction	50 grams once a day

16	*Morinda citrifolia* L.	Rubiaceae	Mengkudu	Fruit	Infusion	100 grams once a day
17	*Moringa oleifera* Lamk.	Moringaceae	Kelor	Leaf	Decoction	100 grams once a day
18	*Morus* L.	Moraceae	Murbei	Leaf	Infusion	50 grams once a day
19	*Musa paradisiaca* L.	Musaceae	Pisang	Leaf	Infusion	50 grams once a day
20	*Ocimum basilicum* L.	Lamiaceae	Kemangi	Leaf	Decoction	30 grams once a day
21	*Orthosiphon stamineus* Benth	Lamiaceae	Kumis Kucing	Leaf	Infusion	40 mL once a day
22	*Pandanus amaryllifolius* Roxb.	Pandanaceae	Pandan Wangi	Leaf	Decoction	10 grams once a day
23	*Phaleria macrocarpa* (Scheff.) Boerl)	Thymelaceae	Mahkota Dewa	Fruit	Decoction	50 grams once a day
24	*Phyllanthus acidus* (L.) Skeels	Phyllanthaceae	Cermai	Leaf	Infusion	50 grams once a day
25	*Phyllanthus niruri* L.	Phyllanthaceae	Meniran	Leaf	Decoction	50 grams once a day
26	*Piper betle* L.	Piperaceae	Sirih	Leaf	Decoction	80 grams once a day
27	*Psidium guajava* L.	Myrtaceae	Jambu biji	Leaf	Decoction	50 grams once a day
28	*Syzygium cumini* (L.) Skeels	Myrtaceae	Jamblang	Leaf	Infusion	100 grams once a day
29	*Syzygium polyanthum* (Wight) Walpers	Myrtaceae	Salam	Leaf	Decoction	50 grams once a day
30	*Zingiber officinale* Rosc.	Zingiberaceae	Jahe	Rhizome	Decoction	150 grams once a day

Limitations and Future Research Directions

Several limitations should be considered when interpreting the findings in relation to anti-ulcerative colitis research. First, the ethnobotanical table does not identify the specific diseases or symptoms treated by each plant. Therefore, it cannot establish whether the plants were traditionally used for colitis, intestinal inflammation, diarrhea, or other gastrointestinal complaints. Second, the present findings do not include experimental measurements of inflammatory mediators, oxidative stress, intestinal permeability, colonic histopathology, or clinical outcomes. Consequently, no conclusions regarding the anti-ulcerative colitis efficacy of the documented plants can be drawn directly from the Table 1. Third, the traditional preparation methods and reported quantities require further clarification to facilitate reproducibility. Botanical identification, plant-part verification, and chemical characterization are also important prerequisites for subsequent pharmacological studies.

Future research should prioritize a selection of plants based on the strength of existing scientific evidence, local availability, traditional-use documentation, and preliminary safety considerations. Subsequent studies could begin with phytochemical characterization and preliminary toxicity assessment, followed by *in vitro* investigations of inflammatory responses and epithelial barrier function. Promising preparations could then be evaluated in validated experimental models of colitis, using appropriate positive controls and endpoints such as disease activity, colon histopathology, inflammatory cytokines, oxidative stress markers, and intestinal barrier integrity. Clinical investigations would only be justified after sufficient preclinical evidence and safety assessment. Any future clinical application should be evaluated as a potential adjunct to established medical care rather than as an unverified replacement for conventional UC treatment.

CONCLUSIONS

The documentation of 30 medicinal plant entries in Pedes Region, provides a foundation for preserving local ethnomedicinal knowledge and identifying botanical resources for further pharmacological investigation. Although the present findings do not establish that these plants are traditionally used to treat UC or possess demonstrated anti-ulcerative colitis activity, they provide a starting point for selecting candidates for targeted research.

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