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AN ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS WITH ANTI-GASTRIC ULCER EFFECTS IN THE TEGALWARU REGION, PURWAKARTA, WEST JAVA, INDONESIA

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ABSTRACT

Gastric ulcer (GU) is a prevalent global gastrointestinal disorder influenced by multiple factors, including excessive alcohol consumption, poor dietary habits, psychological stress, smoking, and the chronic use of non-steroidal anti-inflammatory drugs. This research aims to document and preserve the use of ethnomedicinal to treat GU by communities in the Tegalwaru Region, Purwakarta, 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 Tegalwaru for GU 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 Tegalwaru Region still rely heavily on medicinal plants for their health care system, especially for the treatment of GU with the most frequently used parts of the leaves and their use in decoctions and infusions.

KEYWORDS: Traditional medicine, Ethnomedicinal plants, Tegalwaru Region, Gastric ulcer.

INTRODUCTION

Gastric ulcer (GU) are mucosal lesions that extend beyond the muscularis mucosae, forming a cavity encircled by inflammation. They are primarily categorized into gastric ulcers and duodenal ulcers based on their location.[1] GUs is a prevalent gastrointestinal illness, affecting a substantial proportion of individuals worldwide, with higher prevalence reported in developing countries. Major contributing factors include the misuse of non-steroidal anti-inflammatory drugs (NSAIDs) and infections with *Helicobacter pylori*.[2] Additional risk factors comprise physical and psychological stress, environmental pollutants, pesticides, heavy metals, and tobacco and alcohol use.[3] The development of a GU is multifactorial, resulting from an imbalance between aggressive factors—such as gastric acid, pepsin, ethanol exposure, NSAIDs, and *H. pylori*—and mucosal defensive mechanisms.[4] Protective mechanisms include mucus and bicarbonate secretion, prostaglandin synthesis, adequate mucosal blood flow, and antioxidant systems. These factors ultimately converge through shared pathophysiological pathways

involving oxidative stress, inflammatory signaling, and disruption of the epithelial barrier.[5] Current pharmacological management of GU primarily includes proton pump inhibitors, H2 receptor antagonists, antacids, and antibiotic regimens for *H. pylori* eradication. Although these therapies are effective, long-term use is associated with adverse effects, recurrence, drug resistance, and incomplete mucosal healing in some patients. These limitations have stimulated increasing interest in alternative and complementary therapeutic approaches.[6]

Currently, research to obtain new anti-GU 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 GU in various regions in Indonesia.[7-9] One of the Region in Indonesia that still uses herbal plants as an alternative treatment, especially to treat GU, is the Tegalwaru Region. This research aims to obtain detailed information about the use of herbal plants as an alternative therapy for GU in Tegalwaru, Purwakarta, West Java, Indonesia using a field survey method.

MATERIALS AND METHODS

Study Area

Tegalwaru is located in Purwakarta Regency, West Java, Indonesia, with an area of 73.23 km^2. This area has an altitude of 700 meters above sea level with an average maximum air temperature of 36°C and a minimum of 25°C (humidity: approximately 34% – 92%). Moreover, it is located between 06°38′36″ South Latitude and 107°20′44″ East Longitude. This area 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 4,500 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 Tegalwaru Region, Purwakarta, 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.[10] The plant types obtained were grouped into families according to the Cronquist classification system, except for Pteridophyta and Gymnospermae.[11] 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

Gastric ulcers are lesions that develop in the gastric mucosa when aggressive factors, including gastric acid, pepsin, *Helicobacter pylori* infection, and nonsteroidal anti-inflammatory drugs (NSAIDs), overcome the protective mechanisms of the gastric mucosa. These protective mechanisms involve mucus and bicarbonate secretion, mucosal blood flow, epithelial integrity, and prostaglandin-mediated defense. Medicinal plants have attracted attention as potential sources of gastroprotective compounds because various plant-derived metabolites have demonstrated antioxidant, anti-inflammatory, cytoprotective, and mucosal-healing properties in experimental studies.[12]

This research revealed that 30 plant species are commonly used by local people to treat gastric ulcers (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). Meanwhile, the preparation methods most frequently used were decoction (53.3%) and infusion (46.7%). The survey identified leaves as the most frequently recorded plant part, followed by rhizomes, fruits, and other plant structures. This distribution highlights the importance of leaves and rhizomes in the documented ethnomedicinal practices. From a pharmacognostic perspective, plant parts differ in their phytochemical composition and extraction characteristics. Leaves frequently contain phenolic compounds, flavonoids, and tannins, whereas rhizomes may contain characteristic volatile constituents and other secondary metabolites. Some of these compounds have been investigated for antioxidant, anti-inflammatory, and gastroprotective activities.[13] There are two preparation methods reported in the dataset, namely decoction and infusion. Both methods use water to extract water-soluble constituents, but differences in temperature exposure and extraction duration may influence the resulting chemical profile. Decoction generally involves boiling plant material in water, whereas infusion usually involves steeping the material in hot water for a specified period. These differences may be relevant when comparing traditional preparations with extracts used in pharmacological experiments.[14]

Table 1: Ethnomedicinal plants, local name, part used, mode of administration, and dosage uses in Tegalwaru, Purwakarta, 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	80 grams once a day
2	*Allium sativum* L.	Alliaceae	Bawang Putih	Rhizome	Infusion	20 grams once a day
3	*Alpinia galanga* L.	Zingiberaceae	Lengkuas	Rhizome	Decoction	10 grams once a day
4	*Annona muricata* L.	Annonaceae	Sirsak	Leaf	Infusion	100 grams once a day
5	*Annona squamosa* L.	Annonaceae	Srikaya	Leaf	Decoction	80 grams once a day
6	*Averrhoa carambola* L.	Oxalidaceae	Belimbing	Fruit	Infusion	100 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	150 grams once a day
9	*Cucurbita moschata* Duchesne ex Poir.	Cucurbitaceae	Labu	Leaf	Infusion	100 grams once a day
10	*Curcuma longa* L.	Zingiberaceae	Kunyit	Rhizome	Infusion	20 grams once a day
11	*Durio zibethinus* Murr.	Bombacaceae	Durian	Leaf	Infusion	10 grams once a day
12	*Elephantopus scaber* L.	Asteraceae	Tapak Liman	Leaf	Decoction	50 grams once a day
13	*Garcinia mangostana* L.	Clusiaceae	Manggis	Rind	Infusion	800 mL once a day
14	*Kaempferia galanga* L	Zingiberaceae	Kencur	Rhizome	Infusion	100 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	20 grams once a day
19	*Musa paradisiaca* L.	Musaceae	Pisang	Leaf	Infusion	20 grams once a day
20	*Ocimum basilicum* L.	Lamiaceae	Kemangi	Leaf	Decoction	300 grams once a day
21	*Orthosiphon stamineus* Benth	Lamiaceae	Kumis Kucing	Leaf	Infusion	450 mL once a day
22	*Pandanus amaryllifolius* Roxb.	Pandanaceae	Pandan Wangi	Leaf	Decoction	100 grams once a day
23	*Phaleria macrocarpa* (Scheff.) Boerl)	Thymelaceae	Mahkota Dewa	Fruit	Decoction	200 grams once a day
24	*Phyllanthus acidus* (L.) Skeels	Phyllanthaceae	Cermai	Leaf	Infusion	150 grams once a day
25	*Phyllanthus niruri* L.	Phyllanthaceae	Meniran	Leaf	Decoction	80 grams once a day
26	*Piper betle* L.	Piperaceae	Sirih	Leaf	Decoction	100 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	50 grams once a day
29	*Syzygium polyanthum* (Wight) Walpers	Myrtaceae	Salam	Leaf	Decoction	40 grams once a day
30	*Zingiber officinale* Rosc.	Zingiberaceae	Jahe	Rhizome	Decoction	150 grams once a day

LIMITATIONS AND FUTURE DIRECTIONS

The principal limitation of the present dataset is the absence of explicit information linking individual plant species to gastric ulcer treatment. The table documents plant identity, plant parts, preparation methods, and reported quantities, but it does not specify the disease indication for each species, the number of informants reporting each use, or the perceived treatment outcomes. Furthermore, the reported dosages have not been standardized, and the taxonomic identification and classification of plant parts should be verified. Voucher specimens and authoritative taxonomic references would improve the reliability of the botanical inventory. Future studies should therefore document the indication associated with each plant, the frequency of use among informants, preparation procedures, duration of treatment, perceived adverse effects, and relevant clinical history where ethically appropriate. Such information would allow researchers to distinguish documented traditional practices from pharmacological hypotheses and evidence-supported therapeutic effects.

CONCLUSIONS

In conclusion, the 30 recorded medicinal plant species provide a useful starting point for investigating traditional plant-based approaches to gastrointestinal health. Nevertheless, the current dataset alone cannot establish that these plants are traditionally used specifically for gastric ulcers or that their reported preparations and dosages are effective and safe. Ethnobotanical confirmation, preparation standardization, and rigorous pharmacological and clinical evaluation are required before therapeutic conclusions can be drawn.

REFERENCES

1. Najm WI. Peptic ulcer disease. *Prim Care*, 2011; 38(3): 383-387.
2. Ko KA, Lee DK. Nonsteroidal anti-inflammatory drug-induced peptic ulcer disease. *Korean J Helicobacter Up Gastrointest Res*, 2025; 25: 34–41.
3. He P, Li X, Zou D, Tang F, Chen H, Li Y. Environmental factors inducing gastric cancer: Insights into risk and prevention strategies. *Discov Oncol*, 2025; 16: 25.
4. Lanas A, Chan FK. Peptic ulcer disease. *Lancet*, 2017; 390: 613–624.
5. Oladele JO, Ojuederie OB, Oladele OT, Ajayi EI, Olaniyan MD, Atolagbe OS, *et al*. Gastroprotective mechanism of *Talinum triangulare* on ethanol-induced gastric ulcer in Wistar rats via inflammatory, antioxidant, and H+/K+-ATPase inhibition-mediated pathways. *Drug Chem Toxicol*, 2025; 48: 281–293.
6. Prayoga DK, Aulifa DL, Budiman A, Levita J. Plants with anti-ulcer activity and mechanism: A review of preclinical and clinical studies. *Drug Des Dev Ther*, 2024; 193–213.
7. Alkandahri MY, Patala R, Berbudi A, Subarnas A. Antimalarial activity of curcumin and kaempferol using structure based drug design method. *J Adv Pharm Educ Res*, 2021; 11(4): 86-90.
8. Alkandahri MY, Arfania M, Abriyani E, Ridwanuloh D, Farhamzah, Fikayuniar L, *et al*. Evaluation of antioxidant and antipyretic effects of ethanolic extract of cep-cepan leaves (*Castanopsis costata* (Blume) A.DC). *J Adv Pharm Educ Res*, 2022; 12(3): 107-112.
9. Nuraeni E, Alkandahri MY, Tanuwidjaja SM, Fadhilah KN, Kurnia GS, Indah D, *et al*. Ethnopharmacological study of medicinal plants in the Rawamerta Region Karawang, West Java, Indonesia. *Open Access Maced J Med Sci*, 2022; 10(A): 1560-1564.
10. Bieski IGC, Santos FR, de Oliveira RM, Espinosa MM, Macedo M, Albuquerque UP, de Oliveira Martins DT. Ethnopharmacology of medicinal plants of the Pantanal Region (Mato Grosso, Brazil). *Evid Based Complement Alternat Med*, 2012; 2012: 1-36.
11. Cronquist A. The evolution classification of flowering plants. The New York Botanical Garden, New York, NY, USA, 2nd edition, 1988.
12. Bi WP, Man HB, Man MQ. Efficacy and safety of herbal medicines in treating gastric ulcer: a review. *World J Gastroenterol*, 2014; 20(45): 17020-17028.
13. Paulraj RS, Sathiyaseelan A, Perumal P, Ramachandran A, Paulraj SG. A comprehensive analysis of therapeutic potential of medicinal plant extracts to treat ethanol-induced gastric ulcer. *Biomedicines*, 2026; 14(3): 562.
14. Nisca A, Tanase C. Approaches to extracting bioactive compounds from bark of various plants: A brief review. *Plants (Basel)*, 2025; 14(18): 2929.