



Ethnopharmacy of Medicinal Plants in the Production of Ma'jun as Traditional Medicine in Blang Dalam Village, Darul Hikmah District, Aceh Jaya Regency

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Abstract: Ma'jun is a form of traditional medicinal formulation passed down through generations by the Acehese community and is commonly used for stamina recovery, treatment of minor ailments, and holistic health therapy. This study aims to explore the types of medicinal plants used in ma'jun production by the community of Blang Dalam Village, Aceh Jaya Regency, and to analyze the ethnobotanical value and pharmacological potential of each species. The research method employed is descriptive ethnobotany with in-depth interviews, participatory observation, and field documentation techniques. The study identified 9 species including other natural materials used in ma'jun formulation, with the dominant plant parts being leaves (60%), roots (20%), seeds (10%), and rhizomes (10%). Literature analysis indicates that most of these species possess pharmacological activities such as anti-inflammatory, antioxidant, immunomodulatory, and gastroprotective properties. These findings confirm that ma'jun is a cultural heritage with great potential to be developed as phytopharmaceuticals based on local wisdom. This study recommends the need for toxicity studies, dose standardization, and further clinical trials.

Keywords: Aceh Jaya; Ethnobotany; Ma'jun; Medicinal plants; Traditional medicine

Introduction

The use of medicinal plants as part of traditional medicine systems has been a persistent practice in various regions of Indonesia, including Aceh (Anti et al., 2024). Rural communities still heavily rely on local resources to meet their health needs, especially when access to modern medical facilities is limited or unaffordable (Trisanti et al., 2025). Indonesia is one of the mega biodiversity countries with more than 30.000 plant species, approximately 9.600 of which are known to have potential as traditional medicine (Balogun et al., 2023). In Aceh, the use of medicinal plants has been passed down through generations in the form of

concoctions, oils, powders, and semi-solid preparations such as ma'jun.

Ma'jun is a distinctive herbal formulation in Acehese traditional medicine culture (Fajira et al., 2024). Generally, ma'jun is made from a mixture of various medicinal plants, honey, and other natural ingredients, and is used for various purposes, ranging from stamina enhancement, postpartum recovery, to treating digestive problems and body refreshment (Ervilita et al., 2024; Nurhazizah et al., 2024). Compared to traditional concoctions in the form of decoctions or liquid herbal drinks, ma'jun is considered more practical, longer-lasting, and more effective because its ingredients are condensed, resulting in higher concentration (Adnyana et al., 2025; Rachmani &

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Suhesti, 2024). Nevertheless, knowledge regarding its composition, preparation techniques, and dosage remains oral and is passed from one generation to the next.

In recent decades, interest in traditional medicine has increased significantly alongside the global trend of back to nature and growing concerns about the side effects of synthetic drugs (Ibrahim et al., 2025). This has prompted the need to scientifically document and study various traditional medicinal practices rooted in local knowledge. Ethnobotanical research becomes a relevant approach in this context as it can reveal the relationship between humans and plants along with their cultural, ecological, and pharmacological values (Lima et al., 2021; Ma'rifah & Azmi, 2024). Through an ethnobotanical approach, plant species used in ma'jun can be identified, documented, and their bioactive potential studied in the context of modern pharmaceutical science (Fakri et al., 2025; Nanuayo et al., 2023; Noviyanti et al., 2024).

The Aceh Jaya Region, particularly Blang Dalam Village, Darul Hikmah District, is one of the areas that still maintains the practice of making ma'jun. This village has ecological conditions consisting of secondary forests, traditional plantations, and home gardens rich in medicinal plant diversity. Although local communities possess deep knowledge about plant types and their functions, scientific documentation regarding ma'jun production practices in this region remains very limited. Previous research has only briefly mentioned the use of medicinal plants in general in Aceh, but no study has specifically explored ma'jun formulation in Aceh Jaya (Miltiza, 2021).

As an herbal preparation, ma'jun consists of a complex mixture of various plant species, each with specific pharmacological potential, such as anti-inflammatory, antioxidant, immunomodulatory, and gastroprotective properties (Hewlings & Kalman, 2017; Azim et al., 2025). In various modern studies, species such as *curcuma longa* (turmeric) have been reported to have high biological activity supporting their use in traditional medicine (Ibrahim et al., 2025). However, the composition of ma'jun in Aceh is not limited to commonly used species in other regions, but also includes local plants that have not been extensively tested scientifically.

This research is not only important for cultural preservation but also has strategic relevance in the development of modern herbal medicine (Damanti, 2021; Iskandar & Anjani, 2024). Specific documentation regarding the species used, processing methods, and their use value can become a scientific basis for the development of phytopharmaceuticals and health supplements based on local wisdom. WHO (2023) emphasizes the importance of integrating traditional

knowledge into modern health systems through evidence-based research. Therefore, exploring medicinal plants in ma'jun is an important step toward sustainable and scientific utilization of local biodiversity.

Furthermore, scientific exploration of ma'jun also supports medicinal plant conservation efforts that heavily depend on natural habitat availability. In Aceh Jaya, illegal logging and land conversion potentially threaten the sustainability of certain species widely used in traditional medicine practices (Aprilliani et al., 2019; Maulani & Jonyanis, 2024). Ethnobotanical studies can help identify the most frequently used species and provide conservation recommendations appropriate to the local context.

Based on this background, this study aims to: document medicinal plant species used in ma'jun production in Blang Dalam Village; identify plant parts utilized and their processing techniques; and analyze pharmacological potential based on scientific review. The findings of this study are expected to provide scientific contributions in the fields of ethnobotany, pharmacognosy, and herbal medicine development based on Acehnese local wisdom (Masriadi et al., 2025; Syafira et al., 2023; Zulfaningrum & Eko, 2023).

Method

Research Design

This study employs an exploratory ethnobotanical approach with qualitative and quantitative methods. This approach is commonly used to document local knowledge regarding medicinal plant utilization and has become a standard in global ethnobotanical studies (Martin, 2019; Albuquerque et al., 2019). This research design was chosen to enable comprehensive analysis of plant species used in ma'jun, processing techniques, and community perceptions regarding the function and effectiveness of the formulation.

Research Location and Time

The research was conducted in Blang Dalam Village, Darul Hikmah District, Aceh Jaya Regency. This village was purposively selected because: its community still practices ma'jun production passed down through generations, there is diversity of medicinal plant species in secondary forest environments and home gardens, and there is one traditional healer (tabib) and several informants with deep knowledge about ma'jun (Ardani, 2016; Hardyanti, 2025).

Data collection was carried out during April-July 2025, following the dry season when most medicinal plants are easily obtained and the drying process of materials can be optimally performed.

Participants and Key Informants

Informants were selected using purposive sampling and snowball sampling techniques to identify figures with competence in ma'jun production. Total informants consisted of: 1 traditional healer (tabib), 4 traditional elders understanding the history of herbal concoction use, 20 housewives who use ma'jun, 2 breastfeeding mothers, 15 people who have long consumed ma'jun medicine. Informant selection criteria include: (1) minimum age of 35 years, (2) experience using or preparing traditional medicine for at least 10 years, (3) permanent residence in the local village. This technique is commonly used for traditional ethnobotanical studies (Tongco, 2006).

Data Collection Techniques

Data collection was conducted through three main methods:

In-Depth Interview

Semi-structured interviews were conducted to explore information about types of medicinal plants, plant parts used, ma'jun processing techniques, and dosage and usage indications. Each interview lasted 30-60 minutes and was recorded using audio devices with informant consent.

Participatory Observation

Researchers directly participated in the process of plant collection, material drying, material grinding and mixing, and ma'jun production. Observations were recorded in field notes with photographic documentation as visual evidence.

Research Instruments

Instruments used include semi-structured interview guide, ethnobotanical observation sheet, digital camera for visual documentation, herbarium specimen collection form, and use value index assessment sheet. Instruments were compiled based on

international ethnobotanical guidelines (Medeiros et al., 2021).

Data Analysis

Qualitative Analysis

Narrative data were analyzed using thematic coding techniques (Braun & Clarke, 2019), plant function categorization, and cultural and social interpretation related to ma'jun utilization.

Use Value (UV) Analysis

Use value was calculated using the uv formula:

$$Uv = \frac{U}{N} \tag{1}$$

Where:

U = healing that frequently utilizes herbal materials

N = number of uses mentioned by informants

This index helps determine the most important species culturally and health-wise.

Result and Discussion

Research Results

The research findings identified 9 types of natural materials utilized in traditional medicine production by the community of Blang Dalam Village, Darul Hikmah District, Aceh Jaya Regency. Based on the classification results of natural material types utilized in ma'jun traditional medicine production, they include: turmeric, capa leaves, jaloh leaves, henna leaves, katuk leaves, tongkat ali leaves, pendang, coriander, and honey (Kasim et al., 2024). The number of materials used belongs to 9 family types: zingiberaceae, asteraceae, salicaceae, lythraceae, phyllanthaceae, simaroubaceae, arecaceae, apiaceae, and apidae, each having different contents utilized in ma'jun traditional medicine production in Blang Dalam Village, Darul Hikmah District, Aceh Jaya Regency.

Table 1. Medicinal Plant Species Used in Ma'jun Production

Local Name	Latin Name	Family	Used Parts	Traditional Useful	UV
Kunyit	<i>Curcuma longa</i>	Zingiberaceae	Rhizome	Antioxidant, anti-inflammatory, antibacterial	0.15
Daun capa	<i>Blumea balsamifera</i> l	Asteraceae	Leaves	Wound healing, fever and flu relief	0.03
Daun jaloh	<i>Salix tetrasperma</i> roxb	Salicaceae	Leaves	Antipyretic, antimalarial, antibacterial	0.15
Daun pacar kuku	<i>Lawsonia inermis</i> l	Lythraceae	Leaves	Anti-inflammatory, digestive problem management	0.12
Daun katuk	<i>Sauropus androgynus</i>	Phyllanthaceae	Leaves	Breast milk production, immune system enhancement, blood sugar control	0.36
Tongkat ali	<i>Eurycoma longifolia</i>	Simaroubaceae	Root	Male vitality enhancement, testosterone increase, stress reduction	0.05
Pendang	<i>Pandanus conoideus</i>	Arecaceae	Root	Stamina and male vitality enhancement, digestive disorder management	0.05
Ketumbar	<i>Coriandrum sativum</i> l	Apiaceae	Seeds	Digestive disorder relief, joint pain, anemia prevention	0.24
Madu	<i>Apis Mellifera</i>	Apidae	Leaves	Wound healing, cough and pain relief	0.08

Use Value (UV) Analysis

Use Value (UV) calculation results show three species with the highest values.

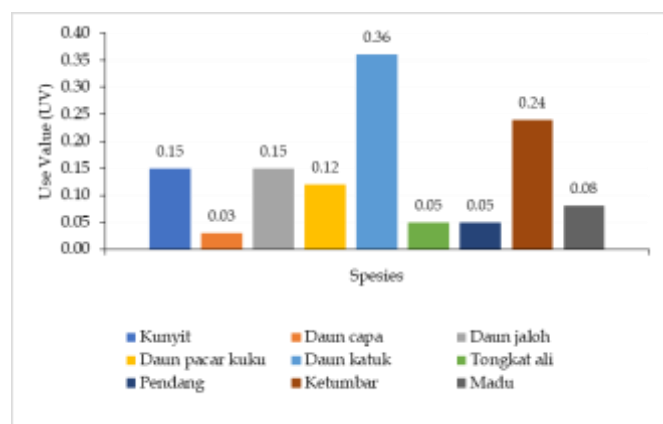


Figure 1. Use Value (UV) calculation results. Katuk leaves (*sauropus androgynus*) -- uv = 0.36; Coriander (*coriandrum sativum* l) -- uv = 0.24; Turmeric (*curcuma longa*) -- uv = 0.15; Henna leaves (*lawsonia inermis* l) -- uv = 0.12

High UV indicates that these species are considered most important by local communities in ma'jun production, consistent with their traditional functions as anti-inflammatory, body warmers, and stamina enhancers. This finding aligns with modern pharmacological literature stating that zingiberaceae species contain bioactive compounds such as *sauropus androgynus*, *coriandrum sativum* l, *curcuma longa*, *lawsonia inermis* l (Hewlings & Kalman, 2017; Choi et al., 2023).

Species with low UV values (0.08-0.03) such as *pandanus conoideus*, *blumea balsamifera* l, and *eurycoma longifolia* have limited use because they are used for treating minor ailments that can typically be directly handled with mild medicine.

Plant Parts Utilized

Recapitulation of plant parts used is as follows: leaves: 60%; rhizome: 10%; roots: 20%; and seeds: 10%. The dominance of leaves, rhizomes, roots, and seeds shows community preference for materials that are easy to process, readily available, and have high bioactive compound concentration.

Ma'jun Production Process Based on Field Observation

The ma'jun production process from 9 types of natural materials utilized in traditional medicine production consists of several stages.

Material Collection

Conducted in the morning, especially for roots and young leaves containing the highest active compounds.

Drying

Materials are dried for 1-2 days under indirect sunlight to prevent active compound degradation.

Grinding

Materials are ground using a mortar or blender until they become fine powder.

Mixing

Powder is mixed with forest honey and a little herbal decoction water until it forms a semi-solid paste.

Maturation

The mixture is stored in an airtight container for 24-48 hours before consumption.

Interview: Community Perception of Ma'jun Effectiveness

Of 42 total informants, 98% stated that ma'jun is very effective for increasing stamina, overcoming fatigue, warming the body, maintaining immune system, and accelerating recovery after illness and wounds.

As many as 75% of informants stated that ma'jun is more effective than liquid herbal drinks because of the more concentrated material consistency and the use of honey as a natural binder.

Discussion

Research results show that the Blang Dalam Village community possesses rich traditional knowledge in the utilization of medicinal plants as ingredients for ma'jun production. This knowledge is passed down through generations and becomes an important part of Acehese traditional medicine culture. The diversity of 9 family types such as zingiberaceae, asteraceae, salicaceae, lythraceae, phyllanthaceae, simaroubaceae, arecaceae, apiaceae, and apidae found indicates that the community has a close relationship with their surrounding environment, especially secondary forest ecosystems and home gardens (Mukarromah & Hayati, 2023). This finding aligns with global ethnobotanical studies emphasizing that biodiversity and local knowledge often go hand in hand, particularly in communities still dependent on natural resources (Lima et al., 2021).

The high Use Value (UV) in several families such as zingiberaceae, asteraceae, salicaceae, lythraceae, phyllanthaceae, simaroubaceae, arecaceae, apiaceae, and apidae indicates that these plants dominate ma'jun formulation. This dominance is related to the high content of bioactive compounds such as curcuminoids, xanthorrhizol, and gingerol that have been scientifically proven to have anti-inflammatory, antioxidant, and immunomodulatory activities (Hewlings & Kalman, 2017; Choi et al., 2023; Paujiah et al., 2020). This supports

that traditional community medicine practices have strong scientific foundations, although this knowledge was obtained through empirical experience (Dilaga et al., 2025; Suharti, 2025).

The ma'jun production process observed during research shows that the community applies herbal processing techniques that support phytochemical effectiveness, such as drying in shaded places, grinding plant materials, and mixing using forest honey (Ade, 2023). This technique aligns with polyherbal preparation procedures in modern pharmacology, where combining several plant types can produce synergistic effects that enhance drug effectiveness. The use of honey as a natural binder also strengthens formulation stability while acting as a natural antibacterial agent (Darmaputri, 2023).

The diversity of pharmacological functions of plants composing ma'jun indicates that this formulation is a multifunctional traditional medicine. Most families have antioxidant, anti-inflammatory, and antimicrobial activities that can support body recovery and maintain immunity (Djaya et al., 2025). Species like sauropus androgynus, coriandrum sativum l, curcuma longa, lawsonia inermis l contribute to enhancing the immune system and tissue health. Meanwhile, plants such as pandanus conoideus and eurycoma longifolia provide effects of increasing vitality and stamina. The combination of these pharmacological properties explains why ma'jun is considered effective in maintaining general health and stamina.

Community perception shows a high level of trust in ma'jun effectiveness. Most informants experienced real benefits from ma'jun consumption, especially in increasing stamina and overcoming fatigue. This finding is consistent with previous research showing that communities in various regions of Indonesia still utilize traditional medicine because it is considered safer, natural, and has been tested through generations (Trisanti et al., 2025). However, perceived effectiveness is also influenced by cultural values and local beliefs, which in the context of traditional medicine can enhance therapeutic effects through psychosocial mechanisms (Krishnaswamy, 2024).

Nevertheless, there is an urgent need for standardization of raw materials and ma'jun usage dosage (Topanni et al., 2024). Variations in processing techniques, material quantities, and compositional differences among practitioners potentially cause inconsistencies in final product quality. In modern phytopharmaceutical standards, dosage consistency and phytochemical profile must be controlled through laboratory studies, including phytochemical, toxicity, and stability tests (Akmal et al., 2025). This is important to ensure that ma'jun can be developed into safe and effective modern herbal products.

Additionally, medicinal plant exploration in ma'jun has important implications for local biodiversity conservation (Ayu et al., 2023). Several species used such as arcangelisia flava and eurycoma longifolia are known to face ecological pressure due to overexploitation and habitat degradation. Ethnobotanical studies like this can function as a basis for designing community-based conservation strategies by prioritizing species with high cultural and health value. This integrative approach has been recommended by WHO (2023) as an ideal model for preserving traditional knowledge and biodiversity simultaneously.

Overall, research results provide a comprehensive picture of the relationship between traditional knowledge, biodiversity, and Acehnese community medicine practices. This research strengthens the argument that ma'jun is not only a cultural heritage but also has great potential to be developed as evidence-based herbal products. Therefore, further research in phytochemistry, toxicology, and clinical trials is highly necessary to support ma'jun utilization in modern health contexts.

Conclusion

Ma'jun is a type of medicine in traditional treatment using herbal ingredients used through generations in society, especially for postpartum healing, increasing male stamina, and addressing various general health complaints (CTRI/2025/01/078915, 2025; Zumaidar et al., 2019). With natural properties without chemicals, it certainly provides safe effects in consuming ma'jun in traditional treatment processes.

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Author Contributions

Conceptualization, methodology, formal analysis, investigation, resources, data curation, writing—original draft preparation, V.M. and M.R.; visualization, project administration, writing—review and editing, supervision, R., H., and C.M.Z. All authors have read and approved the final version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

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