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EXPLORATION OF MEDICINAL PLANTS UTILIZED BY INDIGENOUS PAPUANS IN ARFAK MOUNTAINS REGENCY

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Abstract

This study aimed to explore the use of plants as traditional medicine by indigenous Papuans in the Arfak Mountains. The local population residing in the villages of the Arfak Mountains primarily consists of the Arfak tribes, including the Hatam, Sough, and Meyah. These communities have traditionally relied on local plants to address various health issues. The research employed a descriptive method, incorporating interviews and direct field surveys. Respondents were selected based on their extensive knowledge of medicinal plant use. The results revealed that 20 plant species are utilized by the local population to treat a range of health conditions. These include coughs, colds, fevers, flatulence, itching, boils, malaria, external wounds, hypertension, body aches, internal pain, lumps, fertility issues, facilitation of childbirth, and ailments attributed to witchcraft. Some plants are used individually, while others are combined with different plants. Processing methods include mashing, boiling, or squeezing to extract the liquid. Utilization methods involve drinking, chewing and swallowing the juice, or applying it to affected areas. The plant parts used include leaves, stems, tubers, and flowers.

Keywords: *Exploration, Plant, Traditional Medicine, Arfak Mountains.*

Abstrak

Penelitian ini bertujuan untuk mengeksplorasi pemanfaatan tumbuhan sebagai obat tradisional oleh masyarakat adat Papua di Pegunungan Arfak. Penduduk lokal yang mendiami desa-desa di wilayah Pegunungan Arfak umumnya berasal dari suku Arfak, termasuk di dalamnya suku Hatam, Sough, dan Meyah. Komunitas-komunitas ini secara turun-temurun mengandalkan pemanfaatan tumbuhan lokal untuk mengatasi berbagai permasalahan kesehatan. Penelitian ini menggunakan metode deskriptif dengan teknik pengumpulan data melalui wawancara dan survei lapangan secara langsung. Responden dipilih berdasarkan pengetahuan mereka yang mendalam mengenai penggunaan tumbuhan obat. Hasil penelitian menunjukkan bahwa terdapat 20 spesies tumbuhan yang dimanfaatkan oleh masyarakat setempat untuk menangani beragam kondisi kesehatan. Penyakit-penyakit tersebut meliputi batuk, pilek, demam, perut kembung, gatal-gatal, bisul, malaria, luka luar, hipertensi, nyeri tubuh, nyeri dalam, benjolan, gangguan kesuburan, mempermudah persalinan, serta penyakit yang dipercaya disebabkan oleh ilmu hitam atau sihir. Beberapa tumbuhan digunakan secara tunggal, sementara yang lain dikombinasikan dengan jenis tumbuhan lain. Teknik pengolahan meliputi penumbukan, perebusan, dan pemerasan untuk memperoleh sari tumbuhan. Adapun cara pemanfaatannya mencakup diminum, dikunyah dan ditelan sarinya, atau dioleskan langsung pada bagian tubuh yang sakit. Bagian tumbuhan yang digunakan meliputi daun, batang, umbi, dan bunga.

Kata Kunci: *Explorasi, Tumbuhan, Pengobatan tradisional, Pegunungan Arfak.*

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INTRODUCTION

The global health problem has become increasingly complex. Infectious diseases such as COVID-19, HIV/AIDS, and tuberculosis, as well as the rising prevalence of non-communicable diseases (NCDs) such as diabetes, cardiovascular disease, cancer, and mental disorders, are major challenges. This epidemiological transition is influenced by factors such as lifestyle changes, urbanization, aging populations, and climate change. Non-communicable diseases now account for approximately 71% of all global deaths, particularly in developing countries (World Health Organization, 2020). Furthermore, the emergence of antimicrobial resistance adds pressure on global health systems, highlighting the need for more sustainable healthcare approaches, including innovation in disease treatment and prevention (Laxminarayan *et al.,* 2016). Addressing these issues requires strong international collaboration, investment in health research, and a holistic, integrated reform of health policies (Kickbusch *et al.,* 2019).

These health challenges demand the development of safer and more effective alternative treatments. In this context, natural-based medicines are gaining more attention due to their potential for lower side effects compared to synthetic drugs. As one of the most biodiverse countries in the world, Indonesia holds vast biodiversity, including plant species rich in bioactive compounds with potential as herbal medicines (Kartikasari *et al*., 2018). Research has shown that many native Indonesian plant species possess antimicrobial, anti-inflammatory, and strong antioxidant properties (Patil *et al.,* 2019). This potential positions Indonesia as a rich source for the development of traditional and modern natural-based medicines to address various health issues (Supriyadi *et al*., 2020).

New natural-sourced treatments are often referred to as herbal medicines or phytotherapy. This approach involves the exploration and utilization of plants and other natural substances traditionally used across cultures to treat illnesses and promote health. Modern research increasingly recognizes the potential of natural-based medicines, as many contain bioactive compounds that offer therapeutic benefits such as anti-inflammatory, antioxidant, and antibacterial properties. This approach not only broadens treatment options but also has the potential to reduce reliance on synthetic drugs, which often come with side effects and risks of resistance. By sustainably harnessing natural resources and integrating traditional knowledge with modern science, more effective and eco-friendly therapies can be developed, offering innovative and beneficial solutions for global health.

Research on the exploration of medicinal plants in Indonesia, particularly in Papua, reveals that various ethnic groups in the region possess a wealth of local knowledge about the use of plants as traditional medicines. Papua, as one of Indonesia's most biodiverse regions, is a potential source for the development of herbal medicines. Indigenous Papuans use plants for stamina enhancement, anti-cancer agent, and to treat digestive issues (Suwandi *et al.,* 2018). Research also shows that the use of medicinal plants in Papua often takes a holistic approach, combining physical and spiritual healing passed down through generations (Auwalin *et al*., 2019). However, this great potential has not been fully explored due to limited scientific research documenting the diversity of medicinal plants and their uses. Therefore, there is a need for in-depth studies to document, preserve, and develop the ethnobotanical wealth of Papua as a natural alternative treatment (Kambuaya *et al.,* 2020). This highlights the importance of conducting further research on medicinal plants used by indigenous Papuans in Arfak Mountains Regency.

METHOD

This research was conducted in several villages in the Arfak Mountains Regency, West Papua Province. It was carried out from October to December 2023. The research used a descriptive method with interviews and direct field surveys. The procedure involved interviews, field observations, documentation, sample collection, identification, and descriptive data analysis.

RESULT AND DISCUSSION

The result shows 20 species of medicinal plants used by indigenous Papuans to treat various diseases, with three still under identification. The majority of the plants utilize leaves as the main medicinal organ, processed by boiling or crushing. Other parts such as stems, tubers, and flowers are used less frequently. The treated conditions include wounds, boils, cough, flu, malaria, fever,

muscle pain, itching, high blood pressure, and ailments believed to be caused by witchcraft.

The findings from the exploration of medicinal plants are presented in the following table.

Table 1 Exploration of Plant Medicine in Arfak Mountain Regency

No.	Local Name	Common Name	Utilization by the Local People	Plant Image	Family	Genus/Species
1	Angimerij darat	Antanan Besar	The leaves are used to address fertility issues in women. The leaves of Angimerij darat and Angimerij danau are combined, dried, and brewed like tea before being consumed		Araliaceae	*Hydrocotyle verticillata*
2	Angimerij danau	Gentian air	The leaves are used to address fertility issues in women. The leaves of Angimerij darat and Angimerij danau are combined, dried, and brewed like tea before being consumed		Gentianaceae= Menyantaceae	*Nymphoides indica*
3	Museweb	gelagah	The stem is used to relieve coughs by chewing the stem, swallowing the juice, and discarding the residue		Poaceae	*Saccharum spontaneum*
4	Runtamob		The leaves are boiled, and the resulting liquid is consumed to address swellings			In the process of identification
5	Arguamob	Daun Keji besi	The leaves are boiled, and the resulting infusion is consumed to treat ailments believed, according to local belief, to be caused by black magic or sorcery		Acanthaceae	*Hemigraphis rependa*

6	Argomob	Gempur batu	The leaves are boiled, and the resulting infusion is consumed to address ailments thought, according to local belief, to be caused by black magic or sorcery		Rubiaceae	*Borreria hispida*
7	Armenaub	Mayana	The leaves are used to treat malaria and are also consumed to facilitate childbirth in mothers		Lamiaceae	*Coleus artopurpureus*
8	Runta	Rumput belang	The leaves are boiled, and the resulting infusion is consumed to address ailments thought, according to local belief, to be caused by black magic or sorcery		Commelinaceae	*Zebrina pendula*
9	Argomob		The leaves are boiled, and the resulting infusion is consumed to address ailments thought, according to local belief, to be caused by black magic or sorcery			In the process of identification
10	Domi	Jarak costa	The leaves are utilized to treat malaria		Euphorbiaceae	*Ricinus communis*
11	Aritsgoub	Babandotan	The leaves are used to alleviate itching		Asteraceae	*Ageratum conyzoides*
12	Woimu/ Arwob	Daun pernis	The leaves are used to treat wounds and alleviate muscle soreness		Sapindaceae	*Dodonea viscosa*

13	Burakbei	Arbei liar	The leaves are utilized by the community to manage fever		Rosaceae	*Rubus* sp.
14	Seigohof	Kembang tasbih	The tuber is grated, and the juice is consumed to treat malaria		Cannaceae	*Canna edulis*
15	Distra	Paku resam	The leaves are crushed, and the resulting liquid is consumed to address coughs and colds		Gleicheniaceae	*Gleichenia linearis*
16	Arits	Jabung	The leaves are crushed, and the resulting liquid is consumed to manage hypertension		Asteraceae	*Erigeron linifolius*
17	Kucai	kembang coklat	The tuber is grated, and the resulting liquid is consumed while the residue is applied topically to the body to manage fever		Amaryllidaceae	*Zephyranthes candida*
18	Anska		The leaves are crushed, and the resulting liquid is consumed to alleviate coughs			In the process of identification
19	Kebarkof	Ajeran	The flowers are used to treat boils		Asteraceae	*Bidens pilosa*

20	Aritskof	Sintrong	The leaves are used to treat fresh wounds caused by cuts or similar injuries		Asteraceae	*Crassocephalum crepidioides*

Research on the phytochemical content of these plants shows that they contain secondary metabolites with various health benefits. For example, *Hemigraphis rependa* has strong antioxidant properties that protect cells from damage (Rao *et al*., 2015). Zebrina pendula contains flavonoids and alkaloids with anticancer and antimicrobial potential (Singh & Pandey, 2018), while Borreria hispida has triterpenoids and saponins with anti-inflammatory and antidiabetic effects (Sharma *et al*., 2019). The findings underscore the importance of further research to identify the therapeutic potential of secondary metabolites in various plant species.

The leaves are widely used as medicinal parts due to their rich bioactive compounds, ease of harvesting, and stability during processing. Leaves can be processed into herbal products in fresh, dried, or extract forms and retain their therapeutic potential for extended periods (Sharma et al., 2018). Moreover, leaves are easier to digest and absorb in the body, making them ideal for traditional medicinal preparations such as infusions or decoctions (Goyal *et al.,* 2017).

Indigenous Papuans in the Arfak Mountains have used these plants for generations, proving their effectiveness in traditional medicine. Thus, these plants have the potential to be developed into natural-based medicines that are environmentally friendly and safe for human health. Further studies on dosage and clinical trials are necessary to ensure their safety and efficacy. These plants also hold potential for bioprospecting in the health sector, providing new alternative medicines and opportunities for local economic development if herbal products are commercialized.

CONCLUSIONS

Based on the findings of this study, it can be concluded that indigenous Papuan tribes residing in the Arfak Mountains Regency utilize 20 different species of medicinal plants to treat a variety of ailments. The most frequently used plant part is the leaf, followed by the stem, tuber, and flower. The predominant method of preparation involves boiling, although other techniques such as using the plant without processing, crushing, grating, and squeezing. These medicinal plants are primarily administered either by ingesting the extracted liquid or by applying it topically to specific parts of the body.

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