HAYYAN JOURNAL
Vol. 1 No. 2, June 2024, page. 15-19
ISSN: 3046-6679

Article Review: The Content of Chemical Compounds in Balakacida Plants (Chromolaena odorata) as Traditional Medicine

Sudarmianti[1], Andi Badli Rompegading[2], Syamsuhaemi, Rasnawati, A.Pitung[3]

[1]Mahasiswa Pendidikan Biologi, Fakultas Ilmu Penddikan, Universitas Puangrimaggalatung, Sengkang 90915, Indonesia
[2]Dosen Pendidikan Biologi, Fakultas Ilmu Penddikan, Universitas Puangrimaggalatung, Sengkang 90915, Indonesia
[3]Mahasiswa Pendidikan Biologi, Fakultas Ilmu Penddikan, Universitas Puangrimaggalatung, Sengkang 90915, Indonesia

** e-mail: sudarmiantikth95@gmail.com*

Received: April 07, 2024 *Accepted: May 20, 2024* *Online Published: June 28, 2024*

ABSTRACT

Utilization of plants that are around as an alternative treatment. Balakacida (Chromolaena odorata) thrives and is called a weed but can be used as an alternative medicine. The purpose of this study is to review articles and summarize the nature and utilization of the balakacida plant. This research technique, using the literature review method and concentrating on many studies regarding the possibility of chemical compounds contained in balakacida plants as traditional medicine. Primary data of scientific papers collected from national and international journals through searches in electronic search engines such as Google Scholar, ScienceDirect, and Tailor & Francis were assessed, evaluated, and interpreted by the author. The content of compounds contained in balakacida plants, namely, phenolics, essential oils, alkaloid saponins, flavonoids, flavanones, tannins, and terpenoids. The content of the balakacida plant becomes antibacterial, anti-inflammatory, and anelgesic. Utilization of balakacida plants is used as a medicine for wounds, itching, ulcers, and as aromatherapy.

Keywords: balakacida; *Chromolaena odorata*; chemical compounds.

I. INTRODUCTION

Indonesia is a country rich in biodiversity, including a variety of plants, both beneficial and potentially toxic. Poisonous plants are often considered a threat to human and animal health, but at the same time, some poisonous plants also have potential in traditional medicine.

Knowledge of the benefits of plants is very important to reduce the risk of using alternative chemical medicines, especially the dependence of Indonesian people on the use of plants that are around. According to Hidayati et al., (2022), people's knowledge in understanding vegetable

resources in the environment where they live makes the utilization of surrounding plants increase. According to research conducted previously, plants in Indonesia have long been utilized by the community as a source of traditional medicine (Maulana et al., 2024). Some plants are also found poisonous. Despite their toxic effects, with proper understanding, these plants can be safely utilized for medical purposes.

Medicinal plants have long been utilized by the people of Indonesia as a source of traditional medicine. Indonesia's high biodiversity makes this country one of the richest places for medicinal plants. From tropical rainforests to the highlands, Indonesia holds a wide variety of medicinal plants that have great potential in medicine.

According to data from the Indonesian Ministry of Health, about 30% of all prescription drugs in Indonesia come from natural ingredients, and most of them are derived from medicinal plants. This shows how important the role of medicinal plants is in the traditional and modern medicine system in Indonesia. One of the potential natural ingredients in medicine is the balakacida plant *(Chromolaena Odorata)*.

Balakacida *(Chromolaena odorata)* grows abundantly and covers open areas such as plantations, this plant is usually called a weed. Balakacida is a plant that is used as medicine. Disease therapy using this plant contains many kinds of extracts that are useful as disease healers. The benefits of these wild plants according to respondents are to treat internal diseases or can be categorized as serious diseases.

In this study, we will discuss more about the content of chemical compounds in the balakacida plant, its potential as a traditional medicine.

II. METHODS

This study used the literature review method and concentrated on many studies regarding possible chemical compounds contained in balakacida plants as traditional medicine. Primary data of scientific papers were collected from national and international journals through searching in electronic search engines such as Google Scholar, ScienceDirect, or Tailor & Francys. Selected publications were assessed, evaluated, and interpreted by the authors. The authors' views regarding the possible chemical components in balakacida plants as traditional medicine are reflected in this perspective.

III. RESULTS AND DISCUSSION

Balakacida plants are wild plants that can quickly spread and cover large areas. This plant comes from tropical and subtropical regions in Central America and South America (Tiamiyu & Okunlade, 2020). Balakacida plants *(Chromolaena Odorata)* are weeds or nuisance plants that have many health benefits. Balakacida can be used for traditional medicine that has been applied for generations in certain communities.

The balakacida plant *(Chromolaena Odorata)* belongs to the *Asteraceae* family. Easy spread makes this plant strong in reproduction compared to other plants. The classification of balakacida plants is, Kingdom: *Plantae*; Division: *Spermatophyta*; Subdivision: *Angiospermae*; Class: *Dicotyledonae*; Order: *Asterales*; Family: *Asteraceae*; Genus: *Cromolaena*; Species: *Chomolena odorata*.

Balakacida or *Chromolaena odorata* has a leaf identity in the form of oval and serrated on the edges, and a slightly aggressive texture, this plant also has flowers that flower every dry period. Morphologically, *Chromolaena odorata* is a shrub with straight stems, pithy, fragile, with many

branches, capable of growing up to 2-3 m high. This plant is generally found in plains with altitudes near 1000 to 2800 meters above sea level, but in Indonesia it is even found in lowlands less than 500 meters above sea level. Balakacida can be used as organic fertilizer, biopesticide, and traditional medicine. This is because balakacida leaves have a lot of substance and nutrient content.

Chromolaena odorata is used as a traditional medicine plant, this is not without reason. Balakacida plants contain, phenolics, essential oils, alkaloid saponins, flavonoids, flavanones, tannins, and terpenoids (Aziz, 2020; Nurhajanah et al., 2020). Each serves to mediate various biological properties. From the content of existing compounds, *Chromolaena odorata* balakacida plant is very promising to be developed into a standardized drug (Olawale et al., 2022). Indians use balakacida plants in the treatment of diabetes. In 2013 experimental evidence on the treatment of diabetes was reported by Onkaramurthy et al., (2013). Balakacida plant extract also has potential as a wound-healing medicine (Fikayuniar et al., 2019). The potential of the balakacida plant to interact with various proteins that are important and blood clotting so that it is used as a wound medicine. Leaf and ethanol extracts of balakacida significantly accelerate the blood clotting process (Hasanah et al, 2023).

Phenolic compounds are the most compounds found in the leaves of balakacida *(Chromolaena odorata)*. Phenolic compounds are one of a group of compounds in plants, proven to be able to treat chronic diseases such as diabetes, cardiovascular disease, and neurogenerative diseases (Ávila-Román et al., 2021). Essential oils, also known as ethereal oils or volatile oils, are produced by plants (Almira et al., 2022). Essential oils are also contained in the balakacida plant *(Chromolaena odorata)* which causes a distinctive odor from the plant. Essential oil extracts in plants are used as natural fragrances and provide aromatherapy effects for the body (Djoru & Neonufa, 2023). There are 64 essential oil compounds reported in *Chromolaena odorata*, dominated by sesquiterpenes and hydroxy derivatives.

Saponins are also one of the compounds contained in the balakacida plant *(Chromolaena odorata)*. The content of saponins, glycosides, terpenes, flavonoids, steroids, tannins, alkaloids is the cause of *Chromolaena odorata* extract having anelgesic properties (pain relieving substances) (Aziz, 2020).

Flavonoids are a major group of phytonutrients, with more than 6,000 types present in the aerial parts of *Chromolaena odorata*. Flavonoid compounds make *Chromolaena odorata* extract an anti-inflammatory (Sari et al., 2021; Tiamiyu & Okunlade, 2020). The presence of flavonoids and alkaloids will reduce cell damage in the body. The content of flavonoids, phenolics and tannins is proven to stop internal bleeding due to diathesis, ulcers, and stomach ulcers (Aziz, 2020).

Extracts from *Chromolaena odorata* leaves are categorized as antibacterial. The content of ethanol, methanol, and hexane extraction results provide an inhibitory effect in the development process of gram positive and gram negative bacteria. Not only inhibiting bacterial development, *Chromolaena odorata* plant extract also treats bacterial infections on the skin (Aziz, 2020).

Based on research conducted Fikayuniar et al., (2019), balakacida plant is used as a wound medicine by squeezing and attaching it to the wound for 5 minutes. *Chromolaena odorata* plant, also known as Krinyuh to the people of West Java, is used as an itch medicine (Hidayati et al., 2022). Banten people use *Chromolaena odorata* as an ulcer medicine, by boiling 7 sheets of balakacida leaves then the boiled water is consumed by people with ulcer disease (Rindita et al., 2023)

.

IV. CONCLUSION

Balakacida plants (Chromolaena Odorata) belong to the Asteraceae family. Balakacida plants are widely used as an alternative to traditional medicine. The content of compounds contained in balakacida plants, namely, phenolics, essential oils, alkaloid saponins, flavonoids, flavanones, tannins, and terpenoids. The content of the balakacida plant becomes antibacterial, anti-inflammatory, and anelgesic. Utilization of balakacida plants is used as a medicine for wounds, itching, ulcers, and as aromatherapy.

V. ACNOWLEDGEMENT

The researcher would like to thank the lecturer Dr. Andi Badli Rompegading, M.Pd. for his guidance during the review process. Very valuable learning about the efficacy of Balakacida plants. To all friends who have supported during the review process, we thank you.

VI. REFERENCES

Almira, N. A., Afida, N. M., & Harismah, K. (2022). Addition of Lavender Essential Oil (Lavandula angustifolia) in Manufacture Baby Products Diaper Rash Cream. *Urecol Journal. Part D: Applied Sciences*, *2*(1), 1–10. https://doi.org/10.53017/ujas.159

Ávila-Román, J., Soliz-Rueda, J. R., Bravo, F. I., Aragonès, G., Suárez, M., Arola-Arnal, A., Mulero, M., Salvadó, M. J., Arola, L., Torres-Fuentes, C., & Muguerza, B. (2021). Phenolic compounds and biological rhythms: Who takes the lead? *Trends in Food Science and Technology*, *113*, 77–85. https://doi.org/10.1016/j.tifs.2021.04.050

Aziz, N. A. (2020). The Pharmacological Properties and Medicinal Potential of Chromolaena odorata: A Review. *International Journal of Pharmaceuticals, Nutraceuticals and Cosmetic Science*, *2*, 30–41. https://doi.org/10.24191/ijpnacs.v2.04

Djoru, M. R. B., & Neonufa, G. F. (2023). Pelatihan Pembuatan Sabun Cair Dan Sabun Padat Berbasis Minyak Atsiri Pada Siswa Smk Pertanian Pembangunan Negeri Kupang. *SWARNA: Jurnal Pengabdian Kepada Masyarakat*, *2*(5), 510–515. https://doi.org/10.55681/swarna.v2i5.519

Fikayuniar, L., Gunarti, N. S., & Nurlina, E. (2019). Studi Etnobotani Tumbuhan Obat Di Desa Cintawargi dan Cintalaksana Kecamatan Tegalwaru Kabupaten Karawang Jawa Barat. *Pharma Xplore : Jurnal Ilmiah Farmasi*, *4*(1), 260–267. https://ejurnal.universitas-bth.ac.id/index.php/PSNDP/article/view/835

Hasanah et al. (2023). UJI EFEK SALEP EKSTRAK ETANOL DAUN BALAKACIDA (Chromolaena odorata L.) TERHADAP PENYEMBUHAN LUKA SAYAT PADA MARMUT. *Jurnal Farmasi*, *5*(2), 2655–0814. http://ejournal.medistra.ac.id/index.php/JFM==========

Hidayati, N. R., Mukharomah, S., & Fatimah, T. (2022). Systematical Review : Potential Study of Medicinal Plants in Indonesia to Resolve the Skin Disease. *URECOL: University Research Colloqium*, 1267–1283.

Maulana, I., Sambonu, Y. F., Rusni, R., Kirwelakubun, A., Nay, D. N. U., & Winarti, E. (2024). Kearifan Lokal Papua Dalam Pencegahan Malaria Dengan Tanaman Obat Tradisional:

Systematic Literature Review. *Jurnal Kesehatan Tambusai*, *5*(1), 865–878.

Nurhajanah, M., Agussalim, L., Iman, S. Z., & Hajiriah, T. L. (2020). Analisis Kandungan Antiseptik Daun Kopasanda (Choromolaena odorata) sebagai Dasar Pembuatan Gel pada Luka. *Bioscientist : Jurnal Ilmiah Biologi*, *8*(2), 284. https://doi.org/10.33394/bjib.v8i2.2886

Olawale, F., Olofinsan, K., & Iwaloye, O. (2022). Biological activities of Chromolaena odorata: A mechanistic review. *South African Journal of Botany*, *144*, 44–57. https://doi.org/10.1016/j.sajb.2021.09.001

Onkaramurthy, M., Veerapur, V. P., Thippeswamy, B. S., Madhusudana Reddy, T. N., Rayappa, H., & Badami, S. (2013). Anti-diabetic and anti-cataract effects of Chromolaena odorata Linn.; In streptozotocin-induced diabetic rats. *Journal of Ethnopharmacology*, *145*(1), 363–372. https://doi.org/10.1016/j.jep.2012.11.023

Rindita, Sherley, Rahmawati, T., & Handayani, D. S. (2023). Studi Etnomedisin Tumbuhan Berkhasiat Obat Maag dan Asam Urat di Desa Sukaharja, Lebak-Banten. *Konservasi Hayati*, *19*(2), 96–106. https://ejournal.unib.ac.id/hayati/article/view/29432

Sari, W. E., Darmawi, D., Wianda, M., Erina, E., Zamzami, R. S., Hambal, M., Salim, M. N., Hennivanda, H., & Lubis, T. M. (2021). 5. Antimicrobial Activity of Balakacida (Chromolaena odorata) Endophytic Bacteria Isolated from Aceh Besar Against Staphylococcus aureus and Pseudomonas aeruginosa. *Jurnal Medika Veterinaria*, *14*(2), 125–131. https://doi.org/10.21157/j.med.vet..v14i2.19415

Tiamiyu, A. M., & Okunlade, O. A. (2020). Benefits and detriments of Siam weed (Chromolaena odorata): A review. *Biotechnology and Biochemistry Research*, *8*(1), 21–28.