Eureka Herba Indonesia

Journal Homepage: https://eurekabiomedical.com/index.php/EHI

Jamblang (*Syzygium cumini* (*L.*))*:* A Review of Its Flower and Medicinal Uses

Khusniyah[1*], Muthia Oktaviani Rahayu[1], Nayla Robiatul Adawiyah[1], Himyatul Hidayah[1]

[1]Pharmacy Study Program, Faculty of Pharmacy, Universitas Buana Perjuangan Karawang, Karawang, Indonesia

ARTICLE INFO

Keywords:
Flowers
Jamblang
Medicinal uses
Syzygium cumini

***Corresponding author:**
Khusniyah

E-mail address:
fm20.khusniyah@mhs.ubpkarawang.ac.id

All authors have reviewed and approved the final version of the manuscript.

https://doi.org/10.37275/ehi.v4i3.84

A B S T R A C T

The Jamblang flower is a part of the plant that rarely gets attention in the process of exploring its properties. Jamblang flower is a part of the plant that is quite rich in antioxidant compounds. Antioxidants help protect the body's cells from oxidative damage and can help prevent various degenerative diseases such as heart disease, cancer, and premature aging. This study aimed to carry out a systematic review regarding the potential of Jamblang flowers (*Syzygium cumini*) in medicinal uses. The literature search process was carried out on various databases (PubMed, Web of Sciences, EMBASE, Cochrane Libraries, and Google Scholar) regarding the potency of Jamblang flower (*Syzygium cumini*) in medicinal uses. This study follows the preferred reporting items for systematic reviews and meta-analysis (PRISMA) recommendations. Jamblang flowers have interesting potential health benefits. The active compounds contained in Jamblang flowers, including antioxidants, anti-inflammatory compounds, and anticancer compounds, can provide health benefits for the body.

1. Introduction

The Jamblang plant, also known as java plum or *Syzygium cumini*, is a type of fruit tree native to tropical and subtropical regions, mainly found in Southeast Asia. This plant belongs to the *Myrtaceae* family and is a popular plant in many Asian countries, including Indonesia, India, and Bangladesh. Jamblang can grow into a large tree with a height of 10-15 meters. The stem is sturdy and woody with dense branching. The branches form a dense, lush crown. Jamblang leaves are single leaves that are dark green in color. The leaves are oval or oblong in shape with a pointed tip. They are scattered oppositely along the branches. Jamblang flowers are small and white. They gather in dense clusters of flowers and bloom at the ends of the branches. Jamblang flowers have a fragrant aroma and attract pollinating insects. The Jamblang fruit is the most famous and valuable of these plants. The fruit is round or oval with dark purple skin when ripe. The flesh is dark red to purple with a distinctive sweet and sour taste. Jamblang fruit is usually consumed fresh, processed into juice, jam, or used as an ingredient in sweet dishes.[1-4]

Jamblang flower is a part of the plant that rarely gets attention in the process of exploring its properties. Jamblang flower is a part of the plant that is quite rich in antioxidant compounds. Antioxidants help protect the body's cells from oxidative damage and can help prevent various degenerative diseases such as heart disease, cancer, and premature aging. The active compounds in Jamblang flowers can help reduce inflammation in the body. This can be beneficial in reducing inflammatory symptoms such as pain, swelling, and inflammation. Jamblang flowers are also known to have beneficial effects on the health of the digestive tract. Compounds in Jamblang flowers can

help relieve digestive disorders such as diarrhea and constipation. They can help regulate bowel movements and improve overall health. Jamblang flowers contain compounds that have anticancer activity. These compounds can help inhibit cancer cell growth, prevent metastasis (spread) of cancer cells, and trigger apoptosis (cancer cell death).[5-8] This study aimed to carry out a systematic review regarding the potential of Jamblang flowers (*Syzygium cumini*) in medicinal uses.

2. Methods

The literature search process was carried out on various databases (PubMed, Web of Sciences, EMBASE, Cochrane Libraries, and Google Scholar) regarding the potency of Jamblang flower (*Syzygium cumini*) in medicinal uses. The search was performed using the terms: (1) "potency" OR "Jamblang flower" OR "java plum" OR" simplisia" AND (2) "medicinal uses". The literature is limited to preclinical studies and published in English. The literature selection criteria are articles published in the form of original articles, an experimental study about the potency of Jamblang flower (*Syzygium cumini*) in medicinal uses, the control group only received liquid without therapeutic effect or no treatment, studies were conducted in a timeframe from 2013-2023, and the main outcome was the potency of Jamblang flower (*Syzygium cumini*) in medicinal uses. Meanwhile, the exclusion criteria were animal models that were not related to the potency of Jamblang flower (*Syzygium cumini)* in medicinal uses, the absence of a control group, and duplication of publications. This study follows the preferred reporting items for systematic reviews and meta-analysis (PRISMA) recommendations.

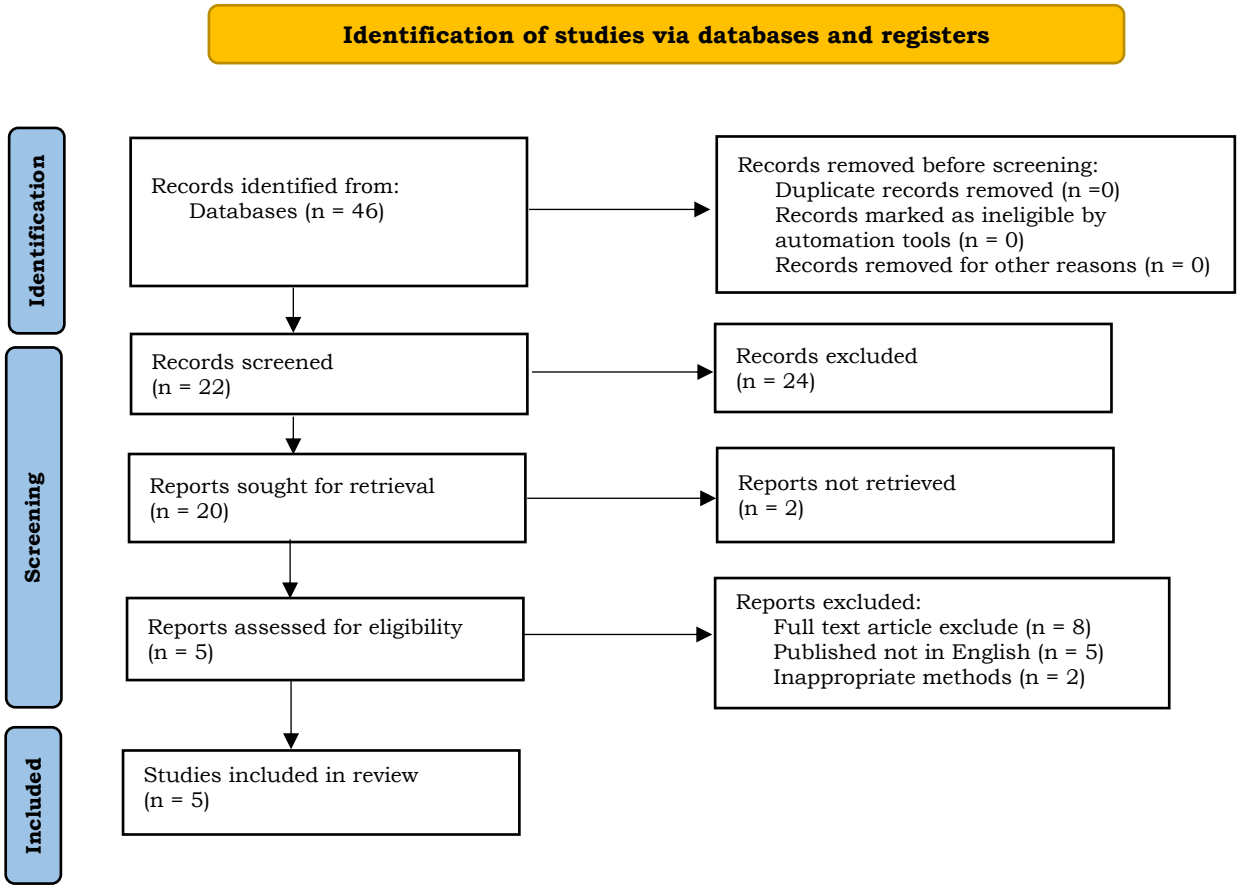

Figure 1. Research PRISMA diagram.

3. Results and Discussion

Jamblang flowers contain antioxidant compounds that are important for fighting free radicals in the body. Antioxidants help protect the body's cells from oxidative damage and can help prevent various degenerative diseases such as heart disease, cancer, and premature aging. Some of the antioxidant compounds contained in Jamblang flowers include phenolics, flavonoids, anthocyanins, and vitamin C. These compounds have the ability to fight free radicals and stop the chain of oxidation reactions that can damage body cells. Protecting the body's cells from oxidative damage has many health benefits. Antioxidants can help reduce the risk of heart disease by protecting cholesterol from oxidation that can cause plaque in arteries. Antioxidants help fight skin damage caused by exposure to free radicals and sunlight. They can help reduce signs of premature aging, such as wrinkles, age spots, and other skin damage. Free radicals can cause oxidative stress, which contributes to premature aging. Antioxidants help protect cells from damage and can help keep the body healthy and strong.[9-11]

There is some scientific evidence showing that Jamblang flowers have anti-inflammatory properties. Several active compounds contained in Jamblang flowers can play a role in reducing inflammation in the body. In vitro and animal studies have shown that compounds such as flavonoids, phenolics, and anthocyanins present in Jamblang flowers have anti-inflammatory potential. They can inhibit the activity of inflammatory enzymes and mediators involved in the inflammatory response, such as pro-inflammatory cytokines and prostaglandins. Several in vitro studies have shown that these compounds can inhibit the activity of enzymes involved in the production of inflammatory mediators, such as cyclooxygenase (COX) and lipoxygenase (LOX) enzymes. This means that these compounds can inhibit the synthesis of prostaglandins and leukotrienes, which are inflammatory mediators in the body. In addition, these compounds can also affect cellular signaling pathways involved in inflammatory responses, such as inhibition of nuclear factor kappa B (NF-κB) activation. NF-κB is a transcription factor that regulates pro-inflammatory gene expression, thereby inhibiting its activity can reduce inflammation. Inhibition of nuclear factor kappa B (NF-κB) activation is one of the known mechanisms of action of compounds such as flavonoids, phenolics, and anthocyanins in reducing inflammation. NF-κB is a transcription factor involved in the regulation of pro-inflammatory gene expression. When inflammation occurs, NF-κB activation can trigger the production of pro-inflammatory cytokines, pro-inflammatory enzymes, and cellular adhesion molecules that contribute to the inflammatory response. Compounds that have the ability to inhibit NF-κB activation can reduce pro-inflammatory gene expression, thus suppressing the inflammatory response. Several studies have shown that compounds such as flavonoids, phenolics, and anthocyanins found in Jamblang flowers can inhibit NF-κB activation. Thus, these compounds may help reduce inflammation by reducing the production of pro-inflammatory cytokines and other pro-inflammatory molecules.[12-15]

Several compounds contained in Jamblang flowers, such as flavonoids, anthocyanins, triterpenoids, and ellagic acid, have attracted attention in anticancer research. In vitro and animal studies have shown the potential of these compounds in inhibiting cancer cell growth, preventing invasion and metastasis of cancer cells, and triggering cancer cell apoptosis. Flavonoids are phytochemical compounds found in various types of plants. Several studies have shown that the flavonoids contained in Jamblang flowers have anticancer properties.[16] They can inhibit cancer cell growth by inhibiting cell proliferation, inducing apoptosis, and inhibiting angiogenesis (the formation of new blood vessels that support tumor growth). Several studies have shown that the anthocyanins contained in Jamblang flowers have anticancer potential. They can inhibit cancer cell growth, induce apoptosis, and inhibit the metastatic process of cancer cells.[17-19] Several studies have shown that the triterpenoids contained in Jamblang flowers have

anticancer activity. They can inhibit cancer cell growth by inhibiting cell proliferation, inducing apoptosis, and inhibiting angiogenesis. Several studies have shown that ellagic acid has anticancer effects. These compounds can inhibit cancer cell growth, induce apoptosis, and inhibit enzymes involved in cancer cell invasion and metastasis.[20.21]

4. Conclusion

Jamblang flowers have interesting potential health benefits. The active compounds contained in Jamblang flowers, including antioxidants, anti-inflammatory compounds, and anticancer compounds, can provide health benefits for the body.

5. References

1. Setiawan D, Wijaya H, Arlianto D. Antidiabetic activity of *Syzygium cumini* (*L.*) Skeels ethanolic leaves extract on diabetic rats. Journal of Basic and Clinical Physiology and Pharmacology. 2016; 27(2): 177-84.
2. Karthivashan G, Arulselvan P, Tan SW, Fakurazi S, Thean LS. Protective effect of polyphenols rich methanol extract from bunga kembang semangkuk (*Portulaca tuberosa L.)* against carbon tetrachloride-induced hepatotoxicity in rats. BMC Complementary and Alternative Medicine. 2016; 16(1): 343.
3. Adnyana IK, Setiawan F, Rustama R. The effect of bangle plant (*Zingiber cassumunar Roxb.)* ethanol extract on blood glucose level and histopathology of liver in diabetic rats. Journal of Applied Pharmaceutical Science. 2017; 7(9): 195-200.
4. Balakrishnan N, Edwardraja S, Rahuman AA. Evaluation of medicinal plant extracts and isolated compound epicatechin from *Parthenium hysterophorus* (*Asterales*: *Asteraceae*) against Japanese encephalitis vector, *Culex tritaeniorhynchus* (*Diptera*: *Culicidae*). Parasitology Research. 2013; 112(2): 671-80.
5. Verma N, Singh G, Kaur R, Jaggi AS. Anti-inflammatory effects of *Syzygium cumini* seed oil in various experimental animal models. Food and Chemical Toxicology. 2014; 70: 48-56.
6. Dwivedi S, Aggarwal A, Devgan M, Sharma M. *Syzygium cumini*: a review on its phytochemical constituents and pharmacological activities. International Journal of Pharmaceutical Sciences and Research. 2019; 10(6): 2543-51.
7. Kaushik P, Saini A. In vitro anti-inflammatory activity of methanol extract of *Jasminum sambac Linn.* leaves. Journal of Pharmacy Research. 2014; 5(8): 4225-7.
8. Harish KM, Srinivasan KK. Evaluation of anti-inflammatory potential of the leaves of *Tamarindus indica Linn.* and *Tylophora indica (Burm. F.) Merrill.* in albino rats. Indian Journal of Pharmaceutical Sciences. 2010; 72(6): 791-3.
9. Ashraf A, Rasheed R, Imran M, Sultana B, Sarfraz RA. Antioxidant and anti-inflammatory activity of leaves of *Carissa opaca Stapf ex Haines.* Lipids in Health and Disease. 2015; 14(1), 97.
10. Ahmed F, Islam M, Karim M, Islam A, Hossain H. Evaluation of anti-inflammatory and membrane stabilizing properties of ethanolic extracts of leaves of *Premna integrifolia Linn.* and roots of *Premna herbacea Roxb.* Bangladesh Pharmaceutical Journal. 2014; 17(1): 41-45.
11. Kundu SK, Roy S, Pramanik N. Anti-inflammatory activity of the extracts of *Butea monosperma* (*Lam.*) stem bark in rats. International Journal of Pharmacy and Pharmaceutical Sciences. 2015; 3(2): 166-8.
12. Chandran G, Patwardhan RS, Satoskar RS. Antioxidant and anti-inflammatory potential of *Amaranthus viridis* leaf extract. Journal of Pharmacy Research. 2013; 6(2): 216-9.
13. Siddique AB, Rana MS, Islam MS. In vitro antioxidant, cytotoxic and anti-inflammatory activities of aerial parts of *Salvia plebeia R.Br.* Advances in Traditional Medicine. 2017; 17(2): 149-57.

14. Sunilson JA, Anu Appaiah KA., Patel M. Comparative studies on anti-inflammatory activity of *Coleus aromaticus* and *Coleus forskohlii* in Wistar Albino rats. World Journal of Pharmacy and Pharmaceutical Sciences. 2014; 1(3): 468-74.
15. Naik R, Mujumdar A. Evaluation of anti-inflammatory activity of methanolic extract of *Polygonum glabrum wild* in rodents. World Journal of Pharmaceutical Sciences. 2015; 3(12): 2321-6.
16. Balakrishnan B, Kumar P, Rajkumar R. Evaluation of anti-inflammatory activity of leaves of *Ficus religiosa Linn.* in albino rats. Asian Journal of Pharmaceutical and Clinical Research. 2016; 9(3): 201-3.
17. Bhadoriya SS, Mishra V, Raut S, Ganeshpurkar A, Jain SK. Anti-inflammatory and antinociceptive activities of a hydroalcoholic extract of *Lantana camara* leaves in experimental animal models. Scientia Pharmaceutica. 2014; 80(3): 685-700.
18. Goyal M, Nagori BP, Sasmal D. Anti-inflammatory and analgesic activity of *Pinus roxburghii Sarg.* Advances in Pharmacological Sciences. 2014; 2012: 245431.
19. Gupta SK, Gupta DK, Siddiqui MS, Gupta A. Evaluation of anti-inflammatory activity of leaf extract of *Psidium guajava Linn.* International Journal of Pharma Research and Development. 2014; 3(2): 37-42.
20. Khedekar PB, Purohit PM. Evaluation of anti-inflammatory activity of hydroalcoholic extract of leaves of *Psidium guajava* in laboratory animals. International Journal of Basic and Clinical Pharmacology. 2014; 3(6): 1007-11.
21. Ayyanar M, Ignacimuthu S. Herbal medicines for wound healing among tribal people in Southern India: Ethnobotanical and scientific evidences. International Journal of Applied Research in Natural Products. 2019; 2(3): 29-42.