



RESEARCH ARTICLE

Trends on Pharmacological Activity of Mangifera Odorata Research: Bibliometric Study 2014-2024

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ARTICLE INFO	ABSTRACT
Received: May 22, 2024	Mangifera Odorata, also known as magga kweni, is a fruit of the Mangifera species found in tropical countries. In Indonesia, M. Odorata is used for sambal as an appetite enhancer. In addition, some countries have used M. Odorata as a treatment such as antioxidants, anti-inflammation, anticancer, and others. However, there has never been a research mapping related to the pharmacological activity of M. Odorata. In this regard, a literature review will be conducted in the form of money scientific articles published in scientific journals. Data were obtained from the Google Scholar database with the keyword Mangifera Odorata and using the Publish or Perish application and visualization using VOSviewer. The literature data obtained were 200 articles with India as the country contributing the most documents. In addition, it is known that the Journal of Ethnopharmacology is the journal with the most documents. Meanwhile, the most studied pharmacological activity of M. Odorata is about antioxidant.
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<p>Keywords</p> <p>Mengifera Odorata</p> <p>Antioxidant</p> <p>Anticancer</p> <p>Antiinflammatory</p>	

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INTRODUCTION

Mango kweni (*Mangifera odorata* Griff) is a tropical mango plant that is widely cultivated by the community. *M. Odorata* belongs to the *Mangifera* species and is a hybrid between *M. indica* and *M. foetida* (bacang) (Mahanti et al, 2021; Juliantari et al, 2021). *M. Odorata* was shown to have pharmacological properties such as anti-diabetes, anti-cancer, anti-inflammatory, and the ability to attenuate kidney damage (Sihombing et al, 2017; Lasano et al, 2019).

M. Odorata has a soft juicy texture, yellow and fibrous pulp with a sweet and sour flavour. Based on its distinctive and fragrant aroma, *M. Odorata* can be easily distinguished from other mango species. Because of its distinctive aroma, mango kweni is widely applied in processed food products such as confectionery products and beverages as a natural flavour (Rizal et al, 2021; Suwardi et al, 2020).

Although many scientific articles and literature related to the pharmacological activity of *M. Odorata* have been published, no analysis and mapping have been done. Therefore, bibliometric analysis will comprehensively identify the main topics and research results in the pharmacological activity of *M. Odorata* (Hou et al, 2022). The bibliometric analysis will also provide insights and guidance for scientists and all stakeholders in academia, industry, medicine and healthcare (Wu et al, 2023). Bibliometric analysis is often used to quantify and compare publications within a topic, field, journal, institution, funding agency, or country, which will allow a comprehensive recognition of the most important and relevant scientifically important and relevant, as well as their value and impact. To this end, we conducted this bibliometric study to explore the characteristics of the global research publication output of *M.Odorata* pharmacological activity research by using the Google Scholar database (Yang and Wu, 2017; Zhou at al, 2024).

MATERIALS AND METHODS

Search tools

Literature and scientific publications related to the pharmacological activity of *M. odorata* were collected from Google Scholar from 2014-2024. Google Scholar is a more diverse publication database (Aryanto, 2023). Google Scholar has advanced features to track citations, citation times based on different search algorithms. The literature search uses the help of the Publish or Perish (PoP) application which is downloaded for free on the web at the address:

<https://harzing.com/resources/publish-or-perish> (Kurniati et al, 2022). The keyword used in the PoP application is *Mangifera Odorata* published from 2014-2024. The literature used is articles published in scientific journals.

The search results through PoP can determine the title of the article and author that has the highest number of citations, the number of documents and journals that publish. In addition, it can also be determined which countries have documents related to the pharmacological activity of *M. Odorata*.

Data analysis

The data obtained from PoP is stored in .csv format and then visualized using the VOSviewer application which is downloaded for free on the web at <https://www.vosviewer.com/> (Kirby, 2023). The results of VOSviewer visualization will map pharmacological activity, chemical compound content, and research that can be developed.

RESULTS AND DISCUSSION

Evaluation of *M. odorata* pharmacological activity research

Based on the PoP results obtained 200 articles that match the keywords, with details as in table 1.

Table 1: Citation metric results of Google scholar data mining 2014-2024

Citation Metric	
Publication years	2014-2024
Citation years	10 (2014-20240
Papers	200
Citation	3305
Cites/year	330.5
Cites/paper	16.53
Cites/author	1101.21
Papers/author	68.80
Author/papers	3.36
h-index	31

Research on the pharmacological activity of *M. odorata* is still an interesting topic, as there is an increasing trend in the number of publications related to this topic (figure 1).

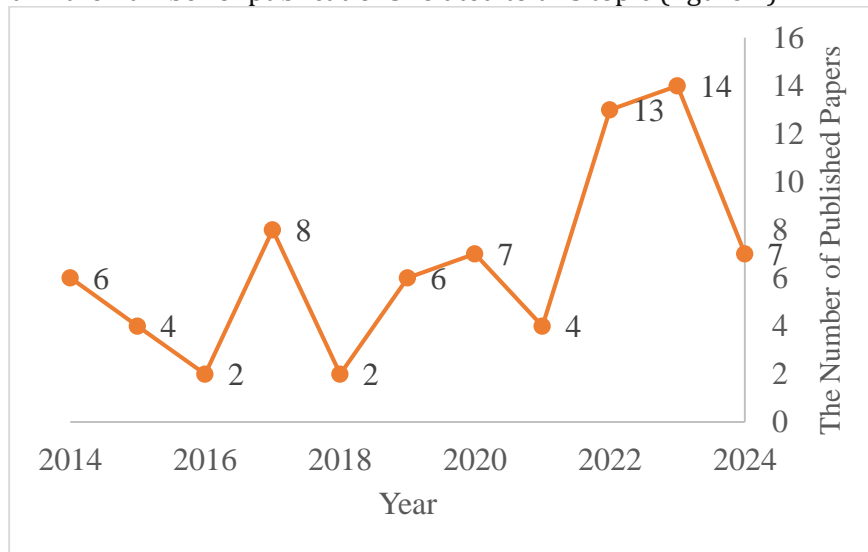


Figure 1: The Number of pharmacological activity of *M. Odorata* Publications between 2014-2024

In 2024 there were only 7 documents because the data was taken until June 7, 2024, so only that number was detected. In addition to the number of documents each year, several journals are the place of publication for researchers. In Figure 2, the journal of *Ethnopharmacology* contains 15 documents related to the pharmacological activity of *M. Odorata*. *Journal of Ethnopharmacology* is one of the journals that publishes original articles related to research on the biological activity of plant and animal substances used in traditional medicine for generations. It documents empirical evidence of indigenous medical knowledge, studies indigenous medicines in order to make a long-term contribution to improving health care in the research area, and reports on unique pharmacological principles of existing indigenous remedies. Thus, this journal is well suited to publish research results related to the pharmacological activities of plants and animals.

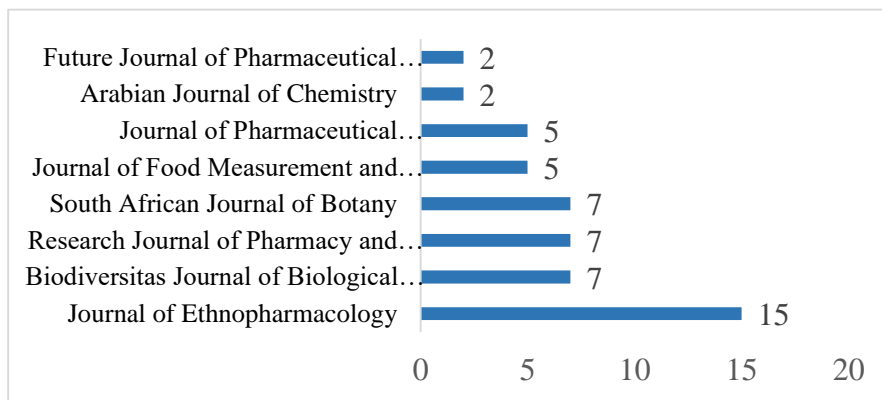


Figure 2: The most receptive journals for pharmacological activity of *M. Odorata* research publication

There are 10 countries with the most research related to the pharmacological activities of *M. odorata*, which are presented in Figure 3.



Figure 3: Countries with contributors to M. odorata research

Based on the number of documents produced, India ranks first (48 documents) followed by Indonesia (33 documents) in second place. In general, the 10 countries with the most documents are tropical countries, which are countries that are suitable for the growth of *M. Odorata*. Therefore, many researches are conducted in these countries.

Selain negara, terdapat 10 peneliti aktivitas farmakologis *M. Odorata* dengan kutipan artikel paling tinggi. Hal ini dapat dilihat pada tabel 2.

No	Author	Title	Year	Citation
1	Shinkafi et al	An ethnobotanical survey of antidiabetic plants used by Hausa–Fulani tribes in Sokoto, Northwest Nigeria	2015	115
2	Agyare et al	An ethnopharmacological survey of medicinal plants traditionally used for cancer treatment in the Ashanti region, Ghana	2018	83
3	Elgorashi EE, McGaw LJ	African plants with in vitro anti-inflammatory activities: A review	2019	49
4	Ohiagu FO et al	Anticancer activity of Nigerian medicinal plants: a review	2021	38
5	A Merez-Sadowska et al	Anti-inflammatory activity of extracts and pure compounds derived from plants via modulation of signaling pathways, especially PI3K/AKT in macrophages	2020	32

6	Nayak D, Ashe S, Rauta PR, Nayak B	Assessment of antioxidant, antimicrobial and anti-osteosarcoma potential of four traditionally used Indian medicinal plants	2017	30
7	Rawa MSA. et al	Impact of different solvents on extraction yield, phenolic composition, in vitro antioxidant and antibacterial activities of deseeded <i>Opuntia stricta</i> fruit	2023	30
8	Mannoubi El.	Impact of different solvents on extraction yield, phenolic composition, in vitro antioxidant and antibacterial activities of deseeded <i>Opuntia stricta</i> fruit	2019	28
9	Omokhua AG et al	A comparison of the antimicrobial activity and in vitro toxicity of a medicinally useful biotype of invasive <i>Chromolaena odorata</i> (Asteraceae) with a biotype not in traditional medicine	2017	28
10	Abubakar MA et al	Antibacterial properties of <i>Moringa Odorata</i> ethanolic and aqueous-ethanolic leaf extracts	2015	26

Pharmacological activities and active compounds of *M. Odorata*

Research on the pharmacological activity of *M. odorata* for 10 years (2014-2024) has been conducted. The researchers are interconnected and can be mapped as shown in Figure 4. The most recent researches are shown with yellow lines.

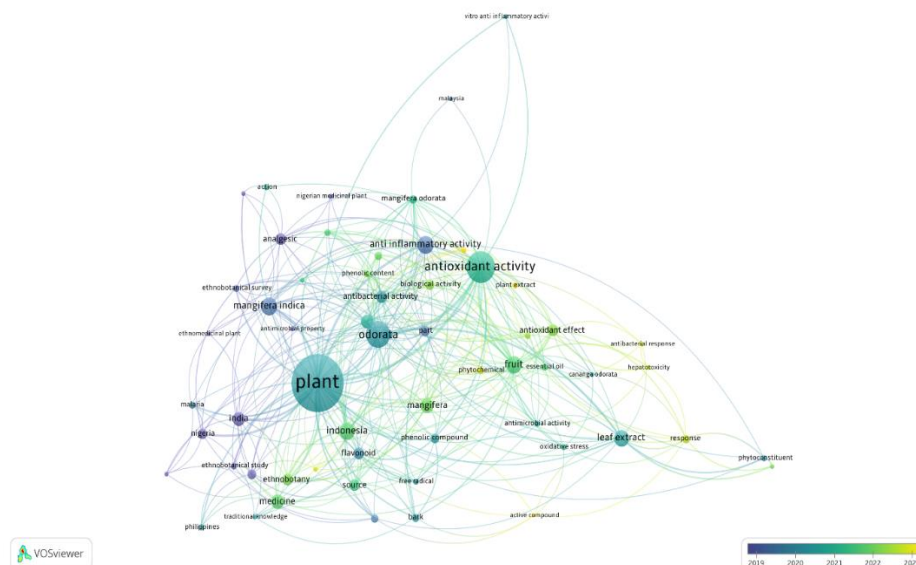


Figure 4: Research network related to *M. odorata*

Figure 4 has shown that research related to the pharmacological activity of *M. Odorata* is still wide open to be studied more widely. Meanwhile, the results of *M. Odorata* pharmacological activity research can be visualized as in figure 5.

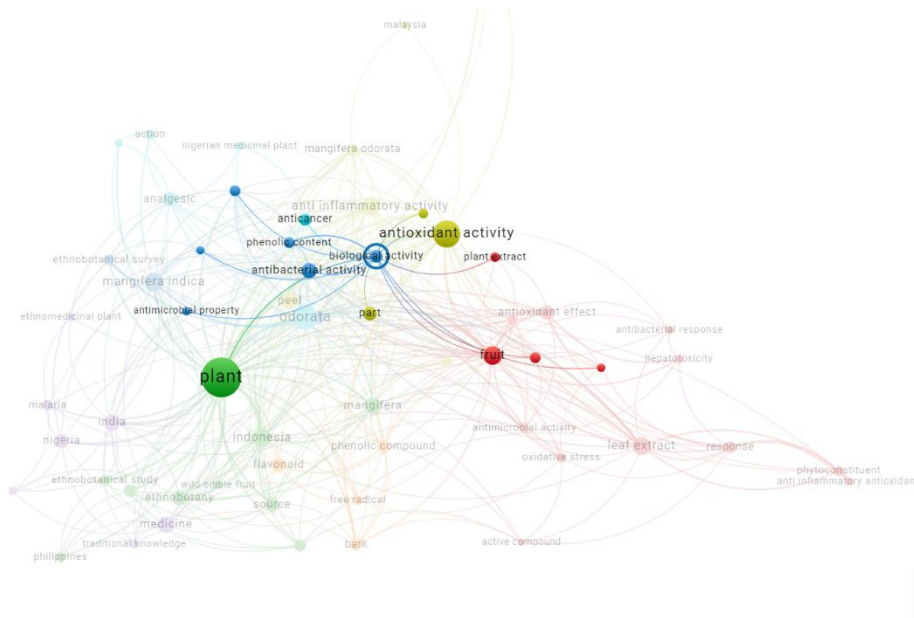


Figure 5: Visualization of *M. odorata* pharmacological activities

Based on figure 5, ten pharmacological activities of *M. odorata* have been identified as shown figure 6.

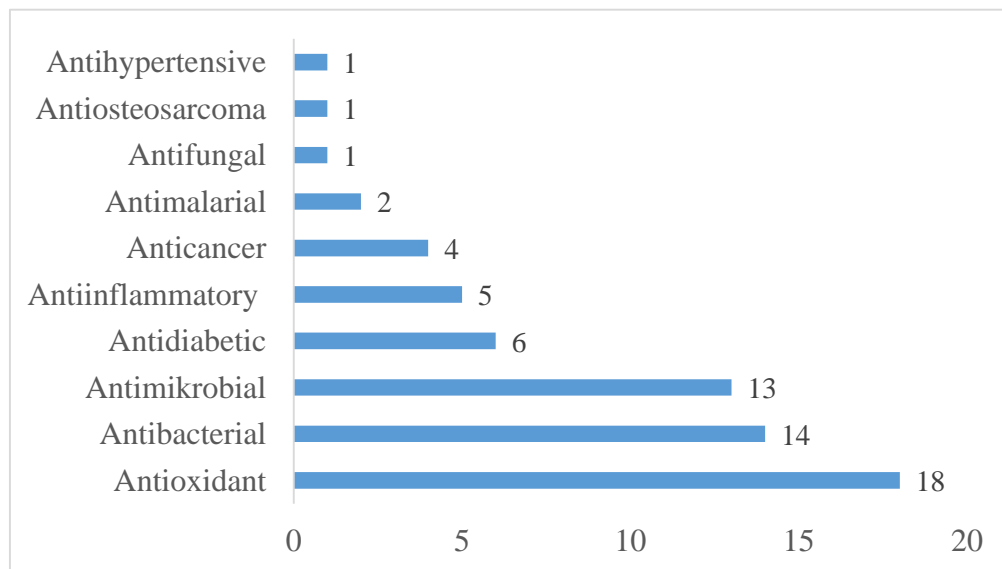


Figure 6: Pharmacological activity of *M. Odorata* research publication

In Figure 6, it shows that the antioxidant activity of *M. Odorata* is a widely researched topic with 18 documents (Saptarini and Herawati, 2017; Norbrillinda et al, 2022). The use of *M. Odorata* as an antioxidant is still an interesting study to be researched. Figure 6 also shows that research on the

topic of antihypertensive, antifungal, and antiosteosarcoma is still not widely studied. This is an area of research that can be researched more deeply and sustainably. Similarly, antimalarial and anticancer can also be the target of research that can be developed (Uyun et al, 2023). The many pharmacological activities are inseparable from the phytochemical content of *M. Odorata*. Many studies have revealed the phytochemical content of the fruit (figure 7) (Recuenco et al, 2023).

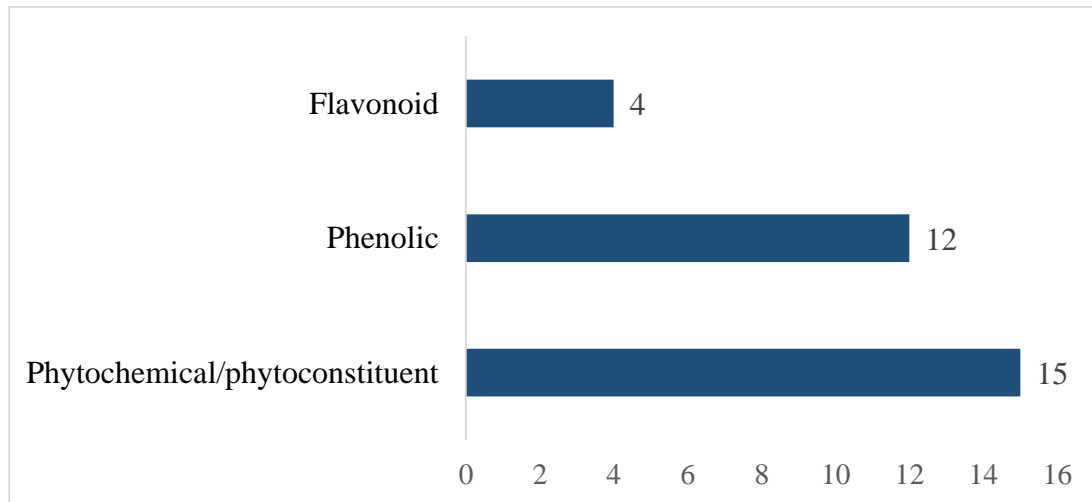


Figure 7: Phytochemical *M. Odorata* research publication

Referring to Figure 7, it appears that research on the content of *M. Odorata* is still wide open. In-depth studies on the chemical content of natural ingredients found in *M. Odorata* are still not much revealed.

CONCLUSION

The study of literature related to the pharmacological activity of *Mangifera Odorata* using the bibliometric analysis method concluded that *M. Odorata* research on antioxidant, antibacterial, and antimicrobial are widely researched topics. Meanwhile, topics on antidiabetes, anti-inflammatory, anticancer, and antimalarial are topics that are still widely open for research. In addition, India and Indonesia are countries that have contributed a lot of research related to the pharmacological activities of *Mangifera Odorata*.

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