



King Saud University
Arabian Journal of Chemistry

www.ksu.edu.sa
www.sciencedirect.com



REVIEW

Morinda citrifolia (Noni): A comprehensive review on its industrial uses, pharmacological activities, and clinical trials

Reem Abou Assi ^{a,*}, Yusrida Darwis ^a, Ibrahim M. Abdulbaqi ^a, Arshad A. Khan ^a, Lim Vuanghao ^b, M.H. Laghari ^a

^a School of Pharmaceutical Sciences, Universiti Sains Malaysia, 11800 Pulau Penang, Malaysia

^b Integrative Medicine Cluster, Advanced Medical and Dental Institute, Universiti Sains Malaysia, Bertam 13200 Kepala Batas, Penang, Malaysia

Received 9 February 2015; accepted 13 June 2015

KEYWORDS

Noni;
Morinda citrifolia;
Cancer;
Pharmacological;
Food;
Industrial

Abstract Traditional medical practitioners in Hawaii and Polynesia have used *Morinda citrifolia* L. (Noni) for centuries to cure or prevent varieties of illnesses. The popularity of *M. citrifolia* as a dietary supplement, a food functional ingredient, or as a natural health enhancer is increasing throughout the world. *M. citrifolia* contains phytochemicals that own antibacterial, antiviral, anti-fungal, antitumor, anthelmintic, analgesic, hypotensive, anti-inflammatory and immune enhancing effects. Moreover, the increasing vogue of *M. citrifolia* has attracted industries to employ it as a part of various products and for wide applications such as a natural source of medicines and chemical reagents as well as a green insecticidal. The wide spread of *M. citrifolia* in tropical climate of the globe, from USA to Brazil reaching to Tahiti, Malaysia and Australia, contributed in enriching its uses and potentials due to the variation in harvest locations. *M. citrifolia* parts including fruits, seeds, barks, leaves, and flowers are utilized on their own for individual nutritional and therapeutic values, however, the fruit is considered to contain the most valuable chemical compounds. This review discusses in details the industrial uses and the pharmacological activities of *M. citrifolia* fruit, seed, leaf and root, along with their isolated phytochemical compounds, through describing the conducted *in vitro* and *in vivo* studies as well as clinical data.

© 2015 The Authors. Production and hosting by Elsevier B.V. on behalf of King Saud University. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

* Corresponding author.

E-mail address: drmeer1@gmail.com (R. Abou Assi).

Peer review under responsibility of King Saud University.



Production and hosting by Elsevier

<http://dx.doi.org/10.1016/j.arabjc.2015.06.018>

1878-5352 © 2015 The Authors. Production and hosting by Elsevier B.V. on behalf of King Saud University.

This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Please cite this article in press as: Abou Assi, R. et al., *Morinda citrifolia* (Noni): A comprehensive review on its industrial uses, pharmacological activities, and clinical trials. *Morinda citrifolia* (Noni): A comprehensive review →. *Arabian Journal of Chemistry* (2015), <http://dx.doi.org/10.1016/j.arabjc.2015.06.018>

Contents

1. Introduction	00
2. Chemical constituents	00
3. Industrial uses.	00
3.1. Natural preservative	00
3.2. <i>M. citrifolia</i> juice	00
3.3. <i>M. citrifolia</i> probiotic juice	00
3.4. Natural source of medicines.	00
3.5. Natural source of chemical reagents	00
3.6. Green insecticidal	00
4. Pharmacological activities	00
4.1. Antimicrobial and antiseptic activity.	00
4.2. Antifungal activity	00
4.3. Antioxidant activity	00
4.4. Anti-inflammatory activity.	00
4.5. Anti-arthritis activity	00
4.6. Anti-cancer activity.	00
4.6.1. <i>In vitro</i> studies	00
4.6.2. <i>In vivo</i> studies	00
4.6.3. Clinical trials	00
4.7. Antidiabetic activity	00
4.8. Wound healing activity	00
4.9. Memory enhancing activity	00
4.10. Anxiolytic and sedative activity	00
4.11. Analgesic activity	00
4.12. Gastric ulcer healing activity	00
4.13. Antiemetic activity	00
4.14. Gout and hyperuricemia healing activity	00
4.15. Anti-psoriasis healing activity.	00
4.16. Immunity enhancing activity	00
4.17. Anti-viral activity	00
4.18. Anti-parasitic activity	00
4.19. Anti-tuberculosis activity	00
4.20. Osteoporotic and otoscopic enhancer	00
5. Conclusion	00
Acknowledgment	00
References.	00

1. Introduction

Morinda citrifolia is the scientific name of the commercially known plant Noni. The name *Morinda citrifolia* is also referring to the botanical name which is originally derived from the two Latin words “morus” imputing to mulberry, and “indicus” imputing to Indian, it belongs to the Rubiaceae family (Nelson, 2006). In Hawaii *M. citrifolia* called Noni, whereas in India it is called Indian mulberry and nuna, or ach. Malaysians call it mengkudu and in Southeast Asia it is called nhaut, while in the Caribbean, it is called the painkiller bush or cheese fruit (Chan-Blanco et al., 2006).

Currently, there are two recognized varieties of *M. citrifolia* (*M. citrifolia* var. *citrifolia* and *M. citrifolia* var. *bracteata*) and one cultivar (*M. citrifolia* cultivar Potteri). The most commonly found variety is *M. citrifolia* var. *citrifolia*, with the greatest health and economic importance. Traditional healers can recognize these varieties by the leaf size and shape, in addition to the fruit odor; however, most research has not distinguished between the different *M. citrifolia* varieties yet (Pawlus and Kinghorn, 2007).

In the early 1990s, the first commercialized products derived from *M. citrifolia* fruit in USA were launched (Santhosh Aruna et al., 2013). Later, in 1996, *M. citrifolia* juice was introduced as a wellness drink, due to numerous reports stating its therapeutic effects (Kamiya et al., 2009). In 2003, the fruit juice of *M. citrifolia* was approved as a novel food by the European commission; however, this approval was limited to the Tahitian fruit juice and not to other products (Potterat and Hamburger, 2007). Amazingly, even with the absence of specific mechanisms of action for the claimed *M. citrifolia* effects (Kamiya et al., 2009), yet the market annual sales of *M. citrifolia* products claimed to reach up to US \$ 1.3 billion (Potterat and Hamburger, 2007).

2. Chemical constituents

Almost 200 phytochemicals were identified and isolated from different parts of *M. citrifolia* (Singh, 2012), however, up to date, the complete phytochemical composition of the *M. citrifolia* has not been fully reported. The chemical compositions and their concentrations are related significantly not only to

Download English Version:

<https://daneshyari.com/en/article/5142022>

Download Persian Version:

<https://daneshyari.com/article/5142022>

[Daneshyari.com](https://daneshyari.com)