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A new anthraquinone from *Morinda elliptica* Ridl.

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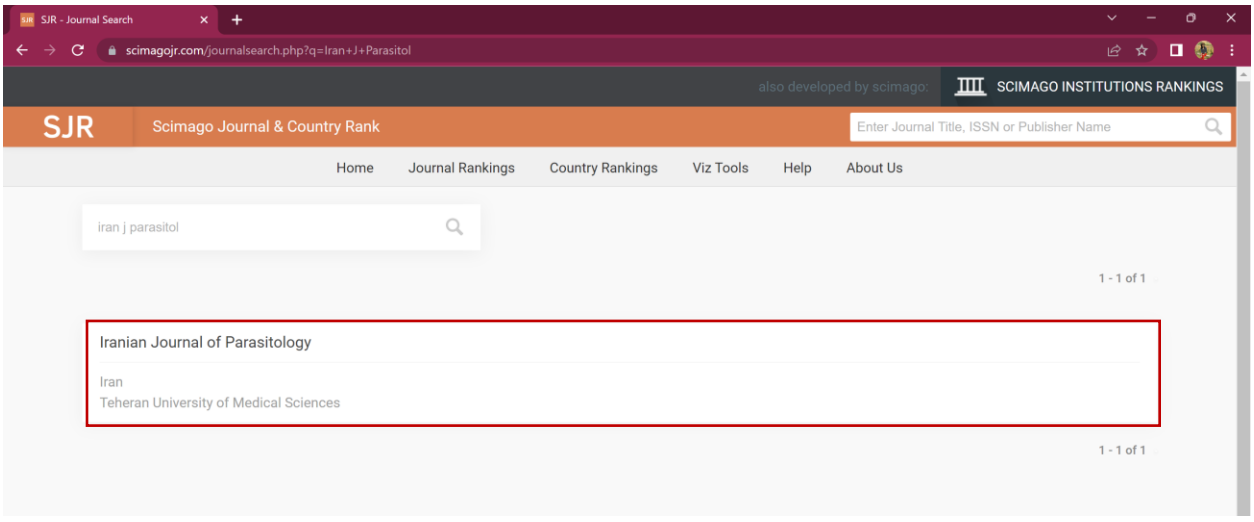

หลักฐานเรื่องที่ 1

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Original Article

A *Morinda royoc* Root Extract and Fractions Exhibit Antigiardial Activity without Affecting Cell Viability

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Abstract

Background: The gastrointestinal parasite *Giardia lamblia* causes giardiasis. Its treatment with standard drugs produces side effects and improper treatment can generate resistant strains. New antigiardial compounds are needed. An analysis was done to identify the antigiardial activity of *Morinda royoc*, a plant used in traditional Mayan medicine to treat stomach and bowel pain. We aimed to assess the efficacy of *M. royoc* roots against *G. lamblia* and their effect on cells viability.

Methods: A methanol extract was done of the root and then fractionated. The extract and fractions were tested in vitro on *G. lamblia* trophozoites and their effect on cell viability was quantified by flow cytometry. The active extract and fractions were analyzed by gas chromatography–mass spectrometry and high-performance liquid chromatography.

Results: The hexane fraction exhibited potent activity against *G. lamblia* (IC_{50} = 0.08 µg/mL). Its principal component was an anthraquinone-type compound. None of the fractions were toxic to human promyelocytic leukemia, chronic myelogenous leukemia and human mononuclear cells.

Conclusion: The medicinal plant *M. royoc* contains promising bioactive agents with antigiardial activity and deserves further research.

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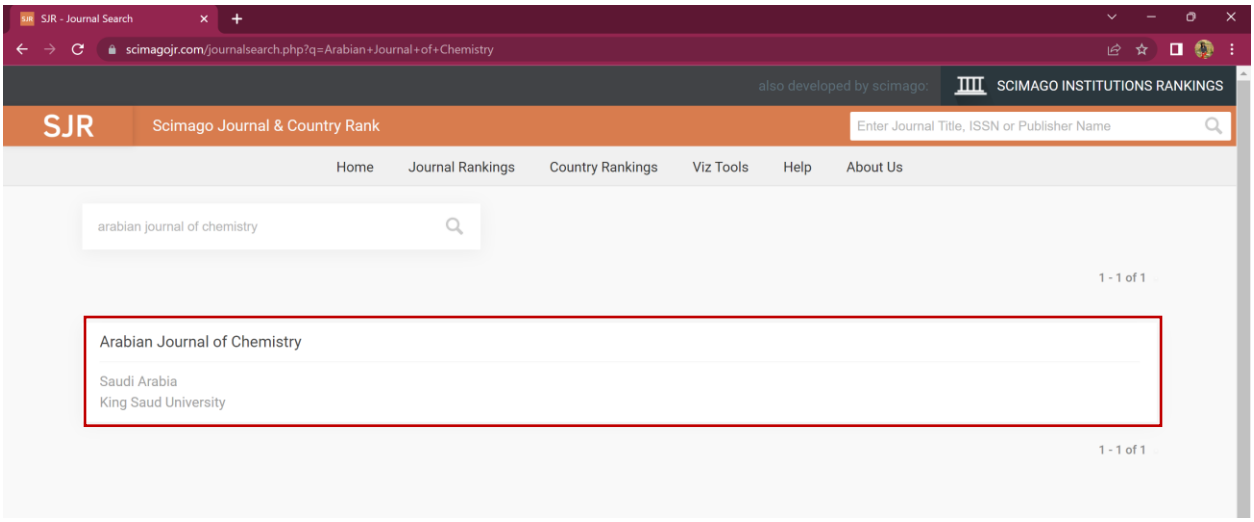
2. Genus *Morinda*: An insight to its ethnopharmacology, phytochemistry, pharmacology and Industrial Applications. Arabian Journal of Chemistry (2022) 15. 104024. (June 2022)



หลักฐานเรื่องที่ 2

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REVIEW ARTICLE

Genus *Morinda*: An insight to its ethnopharmacology, phytochemistry, pharmacology and Industrial Applications

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KEYWORDS

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Traditional uses

Abstract *Background of the study:* The genus *Morinda* of the Madder family, (Rubiaceae) has been widely documented in traditional medicine due to its therapeutic properties and also, contributed a great deal in chemical industry. Different parts of *Morinda* species have traditionally been used to treat malaria, diabetes, memory loss, cancer, inflammation, skin infections, and typhoid fever.

Aim and Objectives: The review provide a critical and innovative information on the traditional uses, phytochemical constituents, and industrial applications of the genus *Morinda*. This will help researchers understand future research trends by bridging the gap between documented literature and contemporary uses.

Methodology: All the systematic literature data or information on the genus *Morinda* was collected via selected electronic databases, including Scopus, PubMed, Web of Science, Springer, Medline, ChemSpider, Taylor and Francis, Google Scholar, SciFinder, ScienceDirect and Wiley. Relevant book chapters, Wikipedia and books were also explored.

Results: The study reveals that different parts of *Morinda* plants have been extensively used for folkloric therapeutic purposes and are a plethora of mineral or nutritional benefits and secondary metabolites. Several classes of bioactive compounds have been elucidated from *Morinda* plants via spectroscopic and chromatographic phytochemical analyses. Compounds such as terpenoids, glycosides, anthraquinones, polyphenols, steroids, saponins and reducing sugars are among the bioactive

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