

Characterization of *Melia azedarach*. L (leaves and fruits) and their insecticidal effects (*Aphis punicea*)



Amani Mahdhi

Keywords

Meliaazedarach L.

antioxidant activity

Antibacterial activity

Insecticidal activity

Secondary metabolites

NWFP

Aromatic & Medicinal Plants

Scale

National

Context

We are interested in studying some biological activities of *Melia azedarach* extracts. For this, aqueous, acetonetic and ethanolic extracts of *Melia* leaves and fruits were tested for their ability to prevent free radical scavenging and entrainment. Similarly, we studied the effect of these extracts on the proliferation of pathogenic bacteria, as well as their ability to block the development of aphids.

Objective

Melia azedarach, also called Lilas of indes, classified under the family of Meliaceae. It is an ornamental tree native to India, presented in several countries of tropical and subtropical regions, especially in Tunisia. The objective of this study is the valorization of plant extracts in the manufacture of organic products to minimize the import of chemicals to human health and the environment.

Results

The leaves and fruits of *Melia azedrach* are rich in secondary metabolites such as alkaloids, tannins, saponins. The acetone extract from the leaves of the Medenine samples showed the highest values with a content of about 235 µg EAG / mg DW of total polyphenols and 23.26 µg EQ / mg DW of flavonoids. The results of the antioxidant activity of iron chelation, trapping of the free radical DPPH and reduction of cation radical ABTS, showed an important anti-radical power of sheets of Medenine compared to the extracts studied, with an IC50 rather weak. On the other hand, extracts of *Meliaazedarach* showed significant insecticidal activity, on the development of pomegranate aphid (*Aphis punicea*), with a median lower dose of 3 mg / ml.



Recommendations

This study, of the importance of the biological activities, extracts of vegetables, it deserves to be deepened. Thus, it is desirable to:

- Vary the concentrations in order to find an extract-growth ratio (minimal inhibitory concentration, maximum bactericidal concentration ...).
- Correlate the structure of *Melia* active metabolites with their biocidal functions.
- Characterize, after partial or complete purification, the complete structure of terpenes via techniques such as GC / MS and nuclear magnetic resonance.
- Extend this study to a number of insects and other multi-resistant bacteria, including klebsials.
- Improve analytical methods for biological products (insecticide, fungicide, etc.) and enhance the value of local plants and a healthy environment.



Impacts and weaknesses

Extracts of *Melia azedarach* L. can at certain concentrations inhibit the development of other useful insects, so doses must be determined in order to protect auxiliaries and the environmental balance more generally.



Future developments

Valuing a species is always a cumulative work that needs to be improved and refined. For the work we have done for the moment, we will focus on the exploitation of different organs of *Melia azedarach* in the field of biologic agriculture as a bactericide, fungicide and insecticide.



Amani Mahdhi

Further information

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Author	Rapporteur	Published on
<p>Contact Ibtissem Tghouti ibtissem.taghouti@gmail.com Authors: Amani MAHDHI, Mariem EL ALOUI, Tarek ZAMMOURI , Khaled ZERRIA, Abdelwahed LAAMOURI E-mail: amanimahdhi1@gmail.com</p> <p>Organisation INRGREF</p> <p>Country and region Tunisia, Sud of Tunisia (Mednine)</p>	<p>Name Ibtissem Taghouti</p> <p>Organisation National Research Institute of Rural Engineering, Water and Forestry</p> <p>Email (hidden)</p>	<p>12 December 2019</p>

About INCREDIBLE Project

INCREDIBLE project aims to show how Non-Wood Forest Products (NWFP) can play an important role in supporting sustainable forest management and rural development, by creating networks to share and exchange knowledge and expertise. 'Innovation Networks of Cork, Resins and Edibles in the Mediterranean basin' (INCREDIBLE) promotes cross-sectoral collaboration and innovation to highlight the value and potential of NWFPs in the region.



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