

Phytochemical composition and biological properties of a hydroalcoholic extract obtained from the aerial parts of *Matthiola incana* (L.) R. Br. (*Brassicaceae*) growing in Sicily

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In continuation of our studies on species belonging to the Brassicaceae family growing in Sicily (Italy), this work aimed to characterize the phenolic profile and the volatile constituents and to evaluate some biological activities of a hydroalcoholic extract (80% methanol) obtained from the aerial parts (leaves and flower buds) of *Matthiola incana* (L.) R. Br. grown wild around Capo D'Orlando (Messina, Sicily). The HPLC-PDA/ESI-MS analysis led to the identification of twelve phenolic compounds, two phenolic acid derivatives (5.46 mg/g extract) and ten flavonoids (155.85 mg/g extract), being luteolin-glucoside the most abundant component (57.07 mg/g \pm 0.87% RSD). By SPME/GC-MS fifty-one volatile constituents were fully characterized, and (Z)-9-Octadecen-1-ol turned out to be the most abundant one (24.35%). The antioxidant potential of *M. incana* extract was evaluated by in vitro methods based on different approaches and mechanisms: DPPH, reducing power, and ferrous ions chelating activity assays. The extract exhibited mild activity both in the DPPH and reducing power assays, whereas it was found to possess good chelating properties, reaching approximately 90% activity at the highest tested dose (2 mg/mL). In order to investigate the antioxidant efficacy of

M. incana extract in a biological setting, the ability to protect bacterial growth and survival from the oxidative stress induced by hydrogen peroxide (H₂O₂) was evaluated on *Escherichia coli*. The extract displayed protective effect against H₂O₂-induced oxidative damage. The antimicrobial activity of *M. incana* extract against selected bacteria and yeasts were assayed by standard methods. The extract didn't show activity against the tested strains (MICs > 500 μ g/mL). Finally, the potential toxicity was investigated using *Artemia salina* lethality bioassay. The median lethal concentration value indicated that the extract did not display any toxicity against brine shrimps (LC₅₀ > 1000 μ g/mL).

Speaker Biography

Maria Fernanda Taviano obtained the following academic qualifications at the Faculty of Pharmacy of the University of Messina (Italy). Specialization degree in Pharmacognosy; PhD in Pharmacognosy; 1st level Master degree in Applied Biotechnology. She has been research grant holder for a period of four years. Currently, she is RTD-A Researcher (SSD BIO/15 - Pharmaceutical Biology) at the Department of Chemical, Biological, Pharmaceutical and Environmental Sciences of the University of Messina. She is Editorial Board Member of the scientific international journal "Pharmacognosy Magazine". Her scientific research activity is mainly focused on the phytochemical study and the evaluation of "in vitro" and "in vivo" biological properties of active products from plant sources, obtainable also by means of "in vitro" culture systems.

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