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Antimycobacterial and hypolipemiant activities of *Bidens odorata* (Cavanilles).

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Abstract

Ethnopharmacological relevance

Bidens odorata Cavanilles is a medicinal and edible plant known as "mozote blanco, aceitilla, acahual, mozoquelite" which is traditionally used in Mexico as a diuretic, hypoglycaemic, anti-inflammatory, antipyretic, antitussive, to treat gastrointestinal disorders, kidney pain, and lung or respiratory diseases.

Aim of the study

This research study was aimed at phytochemical analysis of aerial extracts of *B. odorata* for antimycobacterial and lipid-lowering activities.

*Materials and method*s

Compounds **1** ((((2R, 3R, 4S, 5S, 6R)-3,4,5-Tryhidroxy-6-(((E)-3-(4-hydroxyphenyl) acryloyl) oxy) tetrahydro-2H-pyran-2-yl) methyl-4-hydroxybenzoate) and **2** (3,5-Dihydroxybenzoic acid) were isolated from *B. odorata* aerial shoots and their structural elucidation was carried out using 1 and 2D NMR, infrared spectroscopy (IR) and mass spectrometry (ESI-MS). The antimycobacterial activity of various extracts and compounds **1** and **2** was determined using the Microplate Alamar Blue Assay (MABA). The evaluation of the hypolipidemic effect of the ethanolic extract and the glycosylated compound **1** was tested in a murine model of hypercholesterolemia induced by diet and by Triton WR-1339. On the other hand, the LD_{50} of the ethanolic extract was evaluated in ICR mice by the OECD protocol TG 423.

Results

Antimycobacterial assay of hexane, CH_2Cl_2, EtOAc, ethanolic and aqueous extracts, as well as the new glycosidic compound (**1**) and benzoic acid derivative (**2**) isolated from *B. odorata* showed minimal inhibitory concentrations (MIC) of 100, 12.5, 12.5,12.5, > 200, 3.125 and 50 μg/mL, respectively, against *Mycobacterium tuberculosis* H37Rv. Only hexane and CH_2Cl_2 extracts were observed to be active against *Mycobacterium smegmatis* mc^2155 at a concentration of 50 and 100 μg/mL, respectively. The ethanolic extract showed lipid-lowering activity at doses of 100 and 1000 mg/kg, while glycosidic compound **1** was active at doses of 50 and 100 mg/kg. In addition, the LD_{50} of the ethanolic extract was > 2000 mg/kg, meaning that this extract does not cause lethality or adverse effects, and no signs of organs alterations or tissue damage were observed.

Conclusion

The hexane, CH_2Cl_2, EtOAc, and ethanolic extracts of *B. odorata*, as well as their components **1** and **2**, displayed antimycobacterial activity against *M. tuberculosis*. Moreover, the ethanolic extract and glycosidic compound (**1**) showed an

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