P-16

DETECTION AND ISOLATION OF BIOACTIVE CLERODANE DITERPENES FROM GIANT GOLDENROD (*SOLIDAGO GIGANTEA* AIT.) VIA HIGH-PERFORMANCE THIN-LAYER CHROMATOGRAPHY

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Solidago gigantea Ait. (giant goldenrod) is a plant native to North America, but nowadays it is considered as a quite threatening, highly invasive weed species in Central Europe. Because of its beneficial pharmacological effects (diuretic, antiphlogistic, antioxidant, antispasmodic), it is also recognized as a medicinal plant, and its dried, leafy and/or flowering aerial parts are employed in phytotherapy. It contains a wide variety of secondary metabolites, e.g. flavonoids, phenolic acids, and mono-, di- and triterpenoids.

This study aimed at the non-targeted, effect-directed screening and identification of the antibacterial compounds present in the *n*-hexane extract of *S. gigantea* leaf. For this purpose, HPTLC hyphenated with direct bioautography using *Bacillus subtilis*, *B. subtilis* subsp. *spizizenii*, *Rhodococcus fascians*, and *Aliivibrio fischeri* bacterial strains were utilized. The isolation of the target components was performed by a preparative SPE pre-cleaning followed by a normal-phase flash column chromatography fractionation and a reversed-phase semi-preparative HPLC purification. The targeted characterization of the isolated compounds was carried out with online HPTLC–MS and FIA–MS^n, whereas for their structure determination 1D and 2D NMR techniques were applied.

The structure elucidation revealed that four *cis*-clerodane diterpenes (solidagoic acid H (**1**), solidagoic acid E (**2**), solidagoic acid I (**3**), and solidagoic acid F (**4**)) were isolated, which were previously described in European goldenrod (*S. virgaurea*) [1]. Compounds **1** and **3** exhibited moderate *in vitro* antibacterial activity also in 96-well microplate experiments against *B. subtilis* subsp. *spizizenii* and *R. fascians* bacteria with IC50 values in the range of 32.3–64.4 µg/mL.

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