

ABSTRACT

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Antioxidant activity of substances contained in aerial parts of *Rhodiola rosea* L.

Keywords *Rhodiola rosea* L., aerial part, antioxidant activity, constituents, phenolic compounds

The primary ethanolic extract was prepared from the fresh aerial parts of *Rhodiola rosea* L. obtained from monoculture grown at Botanical garden of Medicinal Plants of Pharmaceutical Faculty. The extract was subjected to sequential extraction after removing ethanol (n-BuOH – EtOAc + EtOH 95 : 5, and precipitation with Et₂O). The Bio-guided assay (determination of total phenolic compounds according to Folin-Ciocalteu, antioxidant activity by DPPH test) showed that filtrate formed by Et₂O precipitation of EtOAc + EtOH 95 : 5 extract contains more phenolic compounds and has the highest antioxidant activity. From the evaporated filtrate, three compounds were obtained by preparative column chromatography: ZG-1 (ethyl gallate), ZG-2 (methyl gallate) and ZG-3 (gallic acid). Although the occurrence of these substances is described in other plants, the content of all three mentioned substances was determined to discover whether they are artefacts caused by large extraction and preparative separation of extract. The results of HPLC analysis of two types of extract prepared from the fresh aerial parts of the same provenience as in the case of preparative extract (ethanol and acetonitrile were used) showed the presence of both esters of gallic acid in fresh samples. The content of ethyl gallate was slightly increased in ethanolic extract, and the content of gallic acid was slightly decreased. The content of all mentioned substances in acetonitrile extract was comparable to the content of the ethanolic extract.

These are original results, which have not yet been published in aerial parts of *Rhodiola rosea* L. All three substances are biologically active and could possibly be used as part of nutraceuticals.