

**GOLDEN ROOT (*RHODIOLA ROSEA* L.),
A POTENTIAL ECONOMIC CROP AND MEDICINAL PLANT**

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Rhodiola rosea L. (Crassulaceae) is a medicinal plant with growing importance due to its versatile bioactivities. The root and rhizomes are used as raw material for producing medicines and food supplements, especially with adaptogenic indications and health claims. The cultivation of golden root started in the former Soviet Union and Eastern Europe in the 1980's, but as the demand is growing for the plant, it is now pursued worldwide to satisfy the increasing demand. Beside transferring the wild growing plants into temperate agricultural systems, cooler mountainous locations are preferred according to the natural habitat.

The bioactivities of the plant are usually attributed to its phenylpropanoid content (rosavin, rosin, rosarin) not found in other *Rhodiola* species. Adulteration with other *Rhodiola* species can be detected via absence or low content of phenylpropanoids. Phenylethanoids are also characteristic component of the taxon, salidroside being the major representative. Phenylethanoids and phenylpropanoids are used as quality markers of root and rhizome samples. Nevertheless, the effect of growing conditions on the concentrations of quality markers has not been studied extensively. The aim of our work was to study the influence of provenance, cultivation and processing on the characteristic phenylpropanoids of *R. rosea* roots and rhizomes. A secondary goal was to identify further quality markers for the analysis of these drugs.

Rhizomes versus roots of 20 provenances were analysed for their phenylpropanoid and phenylethanoid content by HPLC. The ethanolic extracts of the rhizomes contained higher amounts of rosavins than the roots. The rosavin/cinnamyl alcohol ratio was higher in rhizomes and was highly influenced by plant origin than plant part. The rosavin/salidroside ratios indicated authentic *R. rosea* independent of plant part and origin. The phenylpropanoid content was the highest in spring. Age and provenance impact were superposed by seasonal variation. Rosavin/cinnamyl alcohol ratios were higher in samples from the Alpine region than in North European plants. Apart from the experiments with phenylethanoids and phenylpropanoids, we identified two flavonoids present in root and rhizome samples that can also be used in the quality control of raw materials.