

Influence of *Rhodiola rosea* on bacterial intercellular signalling

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Due to its long-standing use, the HMPC concluded that a dry extract (67-70% EtOH) of *Rhodiola rosea* L. (*Sedum roseum* (L.) Scop.) - rose root - can be used for temporary relief of symptoms of stress, such as fatigue and sensation of weakness [1]. Yet, for extracts from the roots and rhizomes of the plant, biological activities which are not closely related to the main field of application have been reported, such as antibacterial effects [2].

In our study, the activity of extracts and fractions prepared from the roots and rhizomes of *R. rosea* cultivars 'Mattmark' and 'Rosavin' against *Campylobacter jejuni* strains was investigated to further understand their antimicrobial activity. After pre-extraction with hexane, by ultrasound assisted extraction with ethanol (96%, v/v) a crude extract was obtained which was further fractionated on DIAION HP-20 adsorbent resin, an additional fraction was prepared by adsorption to polyvinylpyrrolidone (PVP). LC-PDA-ESI-MSⁿ analysis was carried out with respect to phenolic compounds. The antimicrobial activity in relation to the chemical composition of the extract and its fractions was studied with an emphasis on *C. jejuni* AI-2-mediated intercellular signaling. At a concentration of 15.625 mg/L, bioluminescence reduction rates varied from 27% to 72%, while the bacterial membrane remained intact. Fractions rich in proanthocyanidins (PACs) had the strongest antimicrobial effect against *C. jejuni*, whereas those without PACs were less effective. Additionally, fractions rich in flavonoids had strong antimicrobial activity and significant bioluminescence reduction rates in the assays on AI-2 mediated intercellular signaling [3]. We conclude that aside from phenylethanoids like salidroside and rosavins, more attention should be paid to PACs and flavonoids from *R. rosea*, with a great potential for *C. jejuni* AI-2-mediated signaling.

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