

P-035: Compounds of sundew (*Drosera rotundifolia*) as a source for high value products from Finnish peatlands

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Round-leaved sundew (*Drosera rotundifolia*) is a small, carnivorous perennial plant growing mainly on nutrient-poor peat bogs. It has been traditionally used as cough medicine. Round-leaved sundew is not protected in Finland like in the middle Europe, therefore it is collected from mires in Northern Finland and used for production of herbal syrup. Sustainable ways to cultivate sundews have been developed both in field [1,2] and in laboratory [3]. Cultivation would improve its availability and boost the commercialization and development of the high-value products. They contain naphthoquinones which are pharmaceutically active compounds. The dominant naphthoquinone in *D. rotundifolia* is 7-methyljuglone, but they contain also a large variety of other interesting compounds [4,5,6].

The development of high-value products from cultivated sundew biomass requires evaluation of the bioactive properties and the composition of the bioactive compounds in the feedstock. In this study we compared antimicrobial and antioxidative properties of laboratory grown vegetatively cultivated sundew plant tissues with sundews which were grown in two different peatland areas in Western Finland. We used two different methods to evaluate the antioxidative power of ethanol extracts of *D. rotundifolia*, oxygen radical absorbance capacity (ORAC) [7] and ferric reducing antioxidant power (FRAP) [8]. Antimicrobial effect were tested by using recombinant bioluminescent whole cell bacterial biosensors *Staphylococcus aureus* RH4220, *Escherichia coli* K12+pcGLS11, *Acinetobacter baylyi* ADP1+pBAV1K-T5-LUX and *Pseudomonas putida*, which was modified to be bioluminescent with plasmid pBAV1K-T5-LUX [9]. We fractionated the ethanol extracts of sundews with prep. HPLC-DAD (Shimadzu) by using H₂O-methanol gradient and XBridge C18 preparative column for further chemical analysis and identification of the components.

Our results showed that the sundews collected from nature showed higher antioxidative power and more antimicrobial properties than the laboratory grown sundews. The differences in the HPLC grams between the samples revealed that the proposed peak of naphthoquinone was similar in all samples, and the differences in bioactivities were addressed to other components of the extracts. Further analyses of the differences in the components are ongoing.

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