

## 8. Abstract

The fruit of the European elder, *Sambucus nigra* L., is used in therapy as a drug *Sambuci fructus* for its diaphoretic, diuretic and laxative effects. Cultivars of European elder are being studied for the use in the food industry and pharmacy. The fruit contains especially large amount of anthocyanins and flavonoids that are known for their antioxidant activity.

The aim of this work is to measure the antioxidant activity of the drug *Sambuci fructus* and of the fruit of the European elder cultivars Samdal, Mammut, Sambo, Sambu, Sampo, Bohatka, Haschberg, Weihenstephan, Allesö, and Samyl. An extract containing anthocyanins was obtained from fruit by a process based on extraction of frozen material with acidified water at high temperature, followed by separation with polymer non-ionogenic polystyrene-divinylbenzene sorbent.

The content of anthocyanins in the extracts was determined spectrophotometrically using a modified pH-differential method. The absorbance was measured along the range of 350 – 600 nm. The content of the anthocyanins was quantified in units of mg of cyanidin 3-glucoside in 1 ml of extract. The content ranged from 0.33 – 2.76 mg cyanidin 3-glucoside/ml of extract. The highest content was in the extract from the fruit of the cultivar Samdal and the lowest was of the cultivar Mammut.

Then the antioxidant activity of dry alcoholic extracts was determined *in vitro* using the DPPH<sup>•</sup> free radical method. Antioxidant activity of extracts was quantified in units of IC<sub>50</sub> mg of dry extract. The extracts from the fruit of all the cultivars possessed the antioxidant activity ranging from 0.928 – 6.565 mg depending on the cultivar. The extract from the fruit of the cultivar Samdal showed the highest antioxidant activity, while the antioxidant activity of extracts of the cultivars Mammut and Sambo were up to six times lower. The antioxidant activity was Samdal > Samyl > Haschberg > Weihenstephan > Bohatka > Sampo > Allesö > Sambu > Mammut > Sambo.

Antioxidant activity correlated with the content of cyanidin 3-glucoside in extracts from the fruit of the cultivars Samdal, Samyl, Haschberg, and Weihenstephan.

The fruit of industry grown cultivars of the European elder is a considerable source of anthocyanins and thanks to their antioxidant activity it can be used as a source of natural antioxidants.