

nitrite/nitrate (NO_x) level (Griess reaction) were monitored for 180 min. Another group of animals (n=6), received Se infusion (25 µg/kg/h iv) after CT induction.

CT was followed by hemodynamic signs of cardiogenic shock. During resuscitation, the significantly increased intestinal pCO₂ gap, elevated ROI production of the blood referred to prolonged mesenteric ischemia in spite of restored macrohemodynamics. In contrast, superoxide producing capacity of blood, NO_x production in plasma, intestinal blood flow and pCO₂ gap were significantly improved by Se treatment.

CT-caused peripheral circulatory derangement could be effectively influenced by Se treatment due to reduced free radical production and improved intestinal microperfusion.

Study on total phenol content and antioxidant capacity (FRAP) of *Ginkgo biloba* L. leaves from different places

N Koczka¹, É Stefanovits-Bányai²

¹Institute of Horticultural Technology, Szent István University, Gödöllő, Hungary ² Department of Applied Chemistry, Corvinus University of Budapest, Budapest, Hungary

Blood flow regulating and antioxidant effects of ginkgo (*Ginkgo biloba* L.) leaves are well known. Products containing standardized ginkgo leaf extracts are among the most popular medicinal goods in Hungary. Also more and more ginkgo teas (crude leaf drugs) are available in the trade flow as monoteas or in mixtures.

Total phenol content and antioxidant capacity (by the FRAP method) were determined from extracts of ginkgo leaves collected in different places.

Places of collection (all in Hungary): Budapest city (Botanical Garden of Eötvös Lóránd University called "Füvészkert", Botanical Garden of Corvinus University of Budapest - BCU, Margit boulevard in the city centre), Gödöllő city (park of Szent István University), Paks city (city centre) and Székesfehérvár city (city centre). In Füvészkert we collected leaves both from male and female trees. Leaves were dried at 30°C and then pulverized. Based on prescribes of the Hungarian Pharmacopoeia aqueous and aqueous ethanolic (water/ethanol 80/20, v/v) extracts were made from the prepared leaves. Total phenol content was measured spectrophotometrically ($\lambda = 760$ nm) with the use of Folin-Ciocalteu reagent. Antioxidant capacity was determined also spectrophotometrically by the FRAP method.

In case of all samples total phenol content of aqueous extracts was higher than that of aqueous ethanolic extracts. For aqueous ethanolic extracts more pronounced differences were obtained among the samples than for aqueous extracts. In case of aqueous extracts the highest total phenol content (0,132 mg/ml) was detected in the sample from the tree of BCU, while the trees of Füvészkert had the lowest value (0,079-0,081 mg/ml). In aqueous ethanolic extracts the total phenol content was the highest (0,089 mg/ml) in ginkgo leaves collected in Gödöllő city, statistically significantly higher than in the other samples. In case of ethanolic extraction big differences between the sexes could be detected for the phenol content. The lowest value (0,016 mg/ml) was detected from the sample of the female ginkgo tree of Füvészkert.

Total antioxidant capacity determined by the FRAP method was higher in aqueous extracts than in aqueous ethanolic extracts. In case of ethanolic extraction samples of old trees of Füvészkert showed an unexpectedly low antioxidant capacity (0,21-0,28 mmol ascorbic acid/l), significantly lower than the other samples (0,63-1,22 mmol AA/l). In aqueous ethanolic extracts the highest antioxidant capacity (0,81 and 0,73 mmol AA/l) were found for samples of Gödöllő city and of BCU, while the lowest (0,31 mmol AA/l) for the sample of Székesfehérvár city. Antioxidant capacity values of the other samples were about the same. Antioxidant capacity of leaf extracts of male and female trees did not differ from each other.

Both of total phenol content and total antioxidant capacity were higher in aqueous extracts than in aqueous ethanolic extracts. Among the samples collected from different places significant differences were obtained for both of the investigated parameters. Differences in antioxidant capacity did not show connection with the pollution grade of sampling places, these could be caused by age of the ginkgo trees. However the significant differences may worth consideration, as it could have an important role in the therapeutic use of ginkgo leaves. It is also worth to mention, that the antioxidant capacity of ginkgo leaf extracts was much lower than that of products containing standardized extracts, so antioxidant effect of ginkgo teas is lower than that of the standardized extracts.