

Total antioxidant activity as a qualitative parameter of cherries and tiny fruit grown under the integrated protection or ecological mode evaluated by FIA / ECD method



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- CoulArray, FIA, Antioxidants, Electrochemical detection, Cherry, Gooseberry, Currant, Ecological mode, Integrated protection mode

INTRODUCTION:

- Antioxidants have a proven benefit to our health. Polyphenols are very important antioxidants in plants. Determination of total antioxidant activity by FIA/ECD is one of the ways, how to determine the biological and nutritional value of fruit. This method can objectively evaluate differences in antioxidant content between cultivars of cherries and small fruit. We also evaluated the influence of the fruit growing mode on the total antioxidant activity, when the same varieties were grown in two different modes, namely the ecological (ECO) and integrated protection (IPM) modes.

ANALYSIS OF FRUIT USING FIA/ECD:

- We used Flow Injection Analysis (FIA) in conjunction with the CoulArray multichannel electrochemical detector to evaluate bioactive substances in fruit (currants, gooseberries and cherries), where electroactive substances are quantified based on the transferred charge at different potentials on working electrodes. Samples of extracts were evaluated according the charge in μC collected on working porous graphite electrodes at following potentials: 200, 400, 600 and 800 mV. The connection of FIA with electrochemical detection represents a very fast (66 second) and cheap screening method for comparing antioxidant activity in different fruit varieties and is a way how to determinate the nutritional value of fruit. We made a comparison of total antioxidant activity measured in different varieties of fruit grown under the ECO and under the IPM. IPM means chemical treatment of fruit by pesticides.

RESULTS:

- We compared the total antioxidant activity in different varieties of fruit. The highest antioxidant activity was observed in blackcurrants, followed by redcurrants and cherries. The variety of blackcurrant with the highest antioxidant activity was OMETA, of redcurrant JOHNLEER VAN TETS and of cherry SKEENA. The lowest antioxidant activity was found in white gooseberries, specifically in the variety MUCURINES. Total antioxidant activity was higher in genotypes with dark colored fruits. In cherries and gooseberries total antioxidant activity was higher in varieties grown under the ecological mode than under the integrated protection mode.

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Fig.1: Total antioxidant activity in cherries measured by FIA/ECD



Fig.2: Comparison of total antioxidant activity in currants

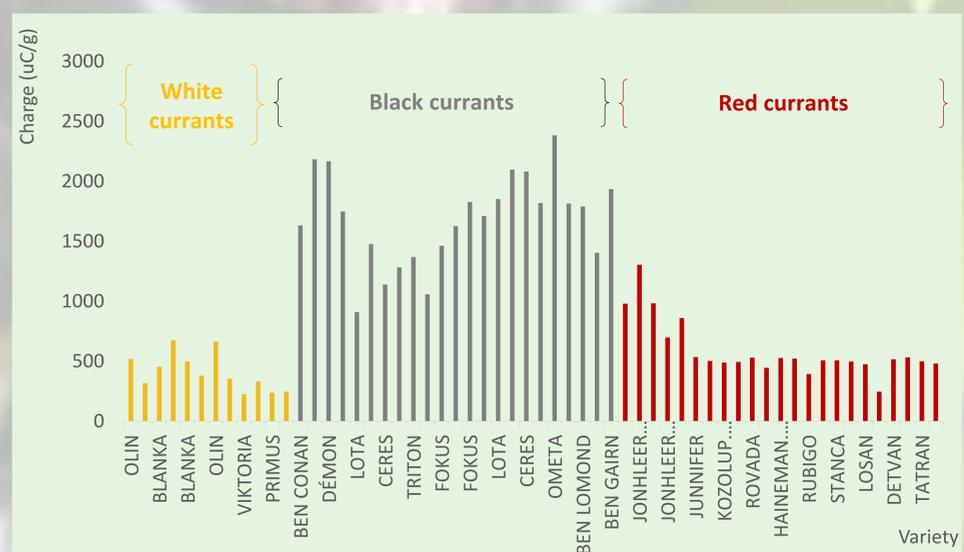


Fig.3: Varieties with the highest antioxidant activity

