Background information for breeding: High variation in vitamin C in Finnish currant and gooseberry collections.

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Indroduction

Especially blackcurrants are valued as a good source of ascorbic acid (vitamin C). Ascorbic acid content in blackcurrant berries is reported to vary usually between 150-250 mg/100 g fresh weight (Mapson1970). Nilsson (1969) however measured lower contents in Northern varieties 'Brödtorp' and 'Öjebyn', but the actual values varied depending cultivation locality, weather conditions and fruit maturity. Hägg et al. reported values between 125 and 151 mg/ 100 g for 'Öjebyn' grown in different parts of Finland. Pantelidis et al. (2007) examined three red/white currant and two gooseberry varieties, the ascorbic acid contents of which varied 36–40 mg/100 g and 20–25 mg/100 g, respectively.

Ascorbic acid contents of berries of currants and gooseberries have been analyzed in connection to RIBESCO – Core collection of Northern European gene pool of Ribes -project, which receives financial support from the European Commission, Directorate-General for Agriculture and Rural Development, under Council Regulation (EC) No 870/2004.

Materials and methods

MTT Horticulture at Piikkiö, South-West Finland upholds a field collection of genetic resources of blackcurrants (*Ribes nigrum*), red and white currants (*R. rubrum group*) and gooseberries (*R. uva-crispa*). The material includes Finnish and Swedish local varieties, unidentified collected material as well as old and modern varieties, and was used in this study.

Ascorbic acid content was measured from three berry samples of each variety by

reflectometer Merck RQflex using Reflectoquant®Ascorbic Acid Test strips. Black currant samples were prepared according to MERCK protocol for Ascorbic Acid in red coloured fruit juices. Frozen fruits were quickly melted by microwave, mixed with electric hand blender and extracted through a polyester cloth. The 1-gram fruit pulp sample, 9 of g water and 500 mg PVPP (polyvinylpolypyrrolidone) were mixed, homogenized and filtered through a filter paper. Samples of green-fruited black currants, red and white currants and gooseberries were prepared as follows. Melted fruits were mixed and extracted through a polyester cloth, and the 2-gram fruit sample and 8 g of water were mixed and homogenized. Results were expressed as mg of ascorbic acid per 100 g fresh weight. Six black currant and one red currant varieties were analyzed by using HPLC.

Results and discussion

Variation in the ascorbic acid content of berries was high. In blackcurrant measured values varied 49–257 mg/100 mg. The highest values were obtained from the green-fruited samples. Values for red and white currants ranged from 53 to 155 mg/100 mg and for gooseberries from 66 to 156 mg/100 mg. This survey provides important background information for use of genetic resources in future breeding programmes, to select crossing parents for high ascorbic acid content.

References

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