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Beneficial health substances from berries and minor crops –

- How to increase their concentration in cultivated species, eliminate losses in processing and enhance dietary use

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Effect of enzyme-aided juice production on the extractability and profile of berry anthocyanins

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Pectinolytic enzymes are commonly used in industrial berry processing to facilitate juice extraction. Concomitantly with the juice yield the extractability of phenolic components can be increased. In our recent studies, bilberries (*Vaccinium myrtillus*) and black currants (*Ribes nigrum*), cranberries (*Vaccinium oxycoccus*), lingonberries (*Vaccinium vitis-idaea*), and saskatoon berries, blue-red berries rich in anthocyanins, were processed with an aid of several commercial enzyme preparations. The effects of enzyme-aided processing on berry anthocyanins was determined with HPLC. The enzyme preparations were dosed based on their polygalacturonase activity from 1 to 100 nkat/g of berry mash. These experiments showed that the anthocyanin yield increased significantly in certain enzyme-aided treatments as compared to control. For bilberry, black currant and saskatoon berry, all the enzymatic treatments resulted in a improved anthocyanin yield, whereas for cranberries and lingonberries both higher and lower amounts of anthocyanins were detected depending on the enzymes used. In addition, the profile and the stability of berry anthocyanins were found to be greatly affected by the glycosidase side activities present in the enzyme preparations. Certain glycosidases hydrolyzed anthocyanins to the corresponding aglycones resulting in a decrease in anthocyanin and an increase in anthocyanidin levels in juices. Thus, understanding of the enzyme activity profile is needed to obtain optimal effect without hydrolysis of anthocyanins to aglycones.