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Separation efficiency of pentafluorophenyl stationary phase for fast chromatography determination of highbush blueberry anthocyanins

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Principal importance of highbush blueberries is mainly in high biological value of fruits. Anthocyanins are the most important pigments of blueberries. Significant property of anthocyanins is their antioxidant activity, which plays important role in prevention of many diseases. A new high-performance liquid chromatography method using alternative pentafluorophenyl fused-core stationary phase has been developed and used for rapid separation of 22 highbush blueberry anthocyanins. High efficiency separation of anthocyanins was achieved on the fused-core column Kinetex PFP, 150 x 4.6 mm (particle size 2.6 μm) protected by precolumn 5x4.6 mm. Linear gradient elution with a mobile phase of water solution of 2% formic acid and acetonitrile at a flow rate of 1.0 ml/min was used. The column operated at 50°C and detection wavelength was set at 520 nm. Blueberries were homogenized and extracted with pure methanol, acidified by formic acid using ultrasound water bath for 20 min and immediately filtrated (PTFE, 0.45 μm). 5 μL of sample extract was directly injected into the HPLC system. The developed method has shown efficient separation of 22 anthocyanins in total run time of 21 min. The potential of pentafluorophenyl phase was demonstrated for a wide range of anthocyanins varying in glycosylation and acylation patterns found in highbush blueberries. Described method was applied to 22 highbush blueberry cultivars. Fluorinated stationary phase showed an alternative and complementary separation approach providing unique aromatic and polar selectivity in comparison with common C-18 reversed phases.

Biography

Barbora Smidova has completed her Master's degree at Charles University in Prague, Faculty of Pharmacy in 2013. Presently, she is pursuing PhD study at the same university, Department of Analytical Chemistry. She works at Research and Breeding Institute of Pomology Holovousy, Department of Genebanks as a Junior Researcher. She has acquired experiences during two months Internship in Massey University, New Zealand and four months in University of Porto, Portugal. She is the author of 1 and co-author of 5 research papers.

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