Analysis of Anthocyanins in Berries & Berry-fed Tissues Using HPLC Coupled to High-resolution Mass Spectrometer

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Yen Le

An analysis of anthocyanins berries and berry-fed tissues is conducted using reverse-phased HPLC coupled to high resolution Exactive Orbitrap mass spectrometer (HR-MS). Since studies on berry extracts have suggested of anthocyanins' protection against age-related cognitive decline, fresh raspberries and blueberries are analyzed using HPLC-HR-MS. In addition, greenfinches (*Carduelis chloris*) were fed with fresh blackberries every day for 2 weeks for analysis using HPLC-HR-MS and HPLC-HR-SRM. This objective of this procedure is to assess the value of HR-MS as an efficient and useful tool for the analysis of anthocyanins berry-fed tissues. Results are shown that HR-MS has large sensitivity in identifying compounds. Experimental values of all estimated mass in blackberry and raspberry extracts was within 1.3 mDa of their theoretical value, with having error of <1.0 mDa. When analyzing the berry-fed tissues of greenfinches using both mass spectrometers, data has shown that there is a ca. 200-fold higher level of sensitivity when using HR-MS to detect cyaniding-3-O-glucoside. HR-MS can also detect targeted and additional nontargeted compounds in distinct areas of the brain and has lower limits of detection with no quantitative analysis attempted.