

Studies on Betaxanthin Profiles of Vegetables and Fruits from the Chenopodiaceae and Cactaceae

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The present study provides an update on the betaxanthin (bx) compositions of red and yellow beetroots, yellow-coloured Swiss chard petioles, and yellow-orange cactus pear. Applying RP-HPLC coupled with positive ion electrospray mass spectrometry and by comparison with UV-vis and mass spectrometric characteristics as well as retention times of semi-synthesized reference compounds, 24 betaxanthins were identified in red and yellow beetroot hypocotyls. Twenty-five and thirteen betaxanthins were present in yellow Swiss chard petioles and the cactus pear cultivar ‘Gialla’, respectively. Ethanolamine-bx and threonine-bx were found to be novel betaxanthins in Chenopodiaceae representatives, which to the best of our knowledge have not been reported as genuine pigments so far. Furthermore, aspartic acid-bx (miraxanthin II), lysine-bx, and methionine-bx, hitherto found in other families, were identified in the Chenopodiaceae for the first time. Additionally, tyrosine-bx (portulacaxanthin II) and tryptophan-bx have not been earlier reported to occur in the Cactaceae. These findings provide valuable phytochemical information and may be useful for a better understanding of the functional properties of betaxanthins in plants.

Key words: *Beta vulgaris*, *Opuntia ficus-indica*, Betaxanthins