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Purification and characterization of the bioactive compound betalamic acid

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Betalains are pigments found in a variety of species and tissues, but red beet (*Beta vulgaris*) roots and fruits of cacti belonging to the genus *Opuntia* are the best known edible sources of betacyanins and betaxanthins. Color is primarily due to the betacyanin betanin in beet root and to the betaxanthin indicaxanthin in *Opuntia* fruits. Betanin containing beet root extracts are used to give a pink or violet color to foods and beverages as the additive 73.40 in the CFR section of the Food and Drug Administration (FDA) in the United States and under the E-162 code in the European Union. New colorants containing betaxanthins have also been proposed. Betalamic acid [4-(2-oxoethylidene)-1,2,3,4-tetrahydropyridine-2,6-dicarboxylic acid] is a naturally occurring compound that is normally found condensed with amino acids, amines and cyclo-DOPA derivatives to form the betalains. Betalamic acid is the structural feature common to all of these pigments and contains the electron resonance system responsible for the spectroscopic properties. Betalamic acid in its free form is also a phytochemicalnaturally found in the fruits of *Opuntia ficusindica.* In this work betalamic acid was purified by chromatography and characterized by UV-vis spectrophotometry and ESI mass spectrometry. The antioxidant and free radical scavenging capacities of betalamic acid were assessed using the FRAP and ABTS•+ radical assays. The purification process described for the structural unit of betalains might have application in the food and pharmaceutical industries to yield betalamic acid in its free form or as a starting material to obtain existing or novel betalains.

Biography

Josefa Escribano-Cebrian was trained as a Biochemist at the Department of Biochemistry and Molecular Biology of the University of Murcia, Spain. She has received her PhD in 1986 and since then she has been working in Plant Biochemistry. She has publications in national and international journals. Currently, her research project combines different approaches and multiple techniques to study the functional capacity of a family of bioactive plant compounds; the betalains.

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