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2nd International Conference on

Nutraceuticals and Nutrition Supplements

July 18-19, 2016 Bangkok, Thailand

Effect of elicitors on the production of antioxidant compounds and redox proteins in broccoli cell cultures

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Broccoli is a good source of antioxidant compounds like glucosinolates, phenolic compounds, ascorbate and glutathione and redox proteins which are important in human nutrition because of their protective role against related-aging diseases. Due to the high value of these compounds, new strategies have been used in order to increase their production since their extraction from raw plant materials is often tedious, expensive and the extracts are often heterogeneous. In this way, we have developed a method of production of antioxidant compounds based on the elicitation of brocoli cell cultures with β-cyclodextrins, methyl jasmonate and NaCl which are able to act as inducers of the biosynthesis of these compounds in other plant cell cultures. As regards to the production of redox proteins, the spent medium of cell cultures provides a convenient, continuous and unique source of extracellular proteins, easily obtained without cell disruption and free of any cytosolic contamination, compared with other methods for isolating apoplastic proteins. In fact, the spent medium of cell cultures constitutes a useful model system of reduced complexity that contains all proteins involved in defense including antioxidant proteins. In this work, we have evaluated the activity of antioxidant enzymes and the levels of ascorbate and glutathione found in elicited broccoli cell cultures.

Biography

Maria Angeles Pedreno Garcia has completed her degree in Chemistry in 1984 and PhD in Sciences, Section Chemistry in 1988. She has completed her Postdoctoral study from 1989-90 in Plant Biotechnology Department of the Agricultural School of Toulouse (ENSAT). In 1993, she has obtained a permanent position as a Lecturer of Plant Physiology in the Department of Plant Biology, University of Murcia, Spain. She is a full Professor of Plant Physiology at the same university since 2006 and has published more than 130 papers in reputed journals and her research lines have been developed in the field of plant physiology and biotechnology.

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