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Djebbar Atmani

University of Bejaia, Algeria

Plant phenolics: New remedies for old disease

Reactive oxygen species (ROS) constitute a group of low-molecular weight substances formed as byproducts of the normal metabolism of oxygen and have important roles in cell signaling and homeostasis. However, accumulation of ROS in cells, a phenomenon observed in oxidative stress, may cause damage to biological molecules and cell membranes, ultimately leading to cell death. ROS are believed to cause cellular damage mainly by lipid peroxidation which incorporates oxygen into membrane lipids. They are implicated in ageing and disease, including atherosclerosis, cancer and lung disease. Nevertheless, ROS production is constantly balanced through the action of an endogenous antioxidant system, essentially made up of superoxide dismutase and catalase. Plant phenolics, an essential part of the human diet, have an aromatic ring bearing hydroxyl groups and their structures may range from simple phenols to complex high-molecular weight tannins. The plant kingdom counts more than eight thousand different phenolic compounds, among which flavonoids represent more than half. During the last decade, numerous research reports clearly have pled for a decisive role of phenolic compounds as potential therapeutic agents in the treatment of inflammation, diabetes, cancer and neurodegenerative disorders. Hence, this study was designed to present an overview on ROS and associated pathologies, as well as case studies on plant phenolics. Moreover, evidence on the role of plant phenolics as potential new medicine will be presented and discussed.

Biography

Djebbar Atmani is a Senior Lecturer at the Faculty of Nature and Life Sciences, University of Bejaia (Algeria). He obtained his Master of Science degree from California State University, Los Angeles (USA) in 1987 and his PhD from the University of Sétif (Algeria) in 2004. His research interest is natural products from medicinal plants. He has published more than 30 papers in high impact scientific journals and has also attended several seminars and symposia worldwide.

djatmani@yahoo.com

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