



Opinion

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Abiotic Elicitors Involved in Plant Phenolics Synthesis



Raluca Alexandra*

Universidad de Las Américas, USA

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*Corresponding author: Raluca Alexandra, Universidad de Las Américas, USA, Email: rmihai@espe.edu.ec

Introduction

The plant kingdom represents an enormous reservoir of chemical compounds with beneficial effects for the plant systems and for the human health. One of these representative compounds are the phenolics which play important roles in plant development, provide structural integrity, scaffolding support to plants and protection against stress. These compounds receive an increasing attention due to their bioactivity related to the antioxidant behaviour attributed to the ability to chelate metals, inhibition of lipoxygenase and scavenge of free radicals. These plant secondary metabolites represent important constituents of the human diet which have been associated with the inhibition of atherosclerosis and cancer and also with the prevention of certain skin disorders. For these reasons and due to their natural origin and low toxicity, phenolic compounds are a promising tool in eliminating the causes and effects of potentially life-threatening diseases.

The evolving commercial importance of phenolic secondary metabolites has in recent years resulted in a great interest for the possibility of production of these bioactive plant metabolites by means of tissue culture technology. Plant cell and tissue culture technologies can be established routinely under sterile conditions from explants, such as plant leaves, stems, roots, and meristems for both the ways for multiplication and extraction of secondary metabolites. In vitro production of phenolic secondary metabolite in plant cell cultures has been reported from various medicinal plants, in order to their commercial production. The utilization of plant cells for the production of natural or recombinant compounds of commercial interest

has gained increasing attention over past decades. The current yield and productivity cannot fulfil the commercial goal of plant cell-based bioprocess for the production of most secondary metabolites. In order to stretch the boundary, new strategies to improve the production of secondary metabolites must be considered. One of these is represented by the use of biotic and abiotic elicitors, compounds triggering the formation of secondary metabolites. The present study aimed to investigate the use of abiotic elicitors mannitol, thidiazuron and abscisic acid as a possible reliable tool for the production of phenolic compounds in babaco (*Vasconcellea × Heilbornii* cv.), a plant with Latin American origin. Based on this premise, the present review is aimed to elicitors include there is an increased interest in these compounds because they have been associated with the inhibition of atherosclerosis and cancer. The bioactivity of phenolics may be plant phenolic compounds such as flavonoids and lignin precursors are. These dietary phytochemicals have been recognized largely as beneficial antioxidants that can scavenge harmful active oxygen species including O_2^- , H_2O_2 , OH, and $(1)O_2$. In plant systems, phytochemicals can act as antioxidants by donating electrons to guaiacol-type peroxidases (GuPXs) for the detoxification of H_2O_2 produced under stress conditions has received due to their diverse phytochemical content. Due to their natural origin and low toxicity, phenolic compounds are a promising tool in eliminating the causes and effects of skin aging, skin diseases, and skin damage, including wounds and burns. Polyphenols, both embarrassing minor problems (e.g., wrinkles, acne) or serious, such as cancer.



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