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Phytomelatonin: Helping plants to survive and to thrive

This presentation will summarize the advances that have been made in terms of the identified functions of melatonin in plants. Melatonin is an endogenously-produced molecule in all plant species that have been investigated. Its concentration in plant organs varies in different tissues e.g., roots versus leaves and with their developmental stage. As in animals, the pathway of melatonin synthesis in plants utilizes tryptophan as an essential precursor molecule. Melatonin synthesis is inducible in plants when they are exposed to abiotic stresses (extremes of temperature, toxins, increased soil salinity, drought, etc.) as well as to biotic stresses (fungal infection). Melatonin aids plants in terms of root growth, leaf morphology, chlorophyll preservation and fruit development. There is also evidence that exogenously-applied melatonin improves seed germination, plant growth and crop yield and its application to plant products post-harvest shows that melatonin advances fruit ripening and may improve food quality. Since melatonin was only discovered in plants two decades ago, there is still a great deal to learn about the functional significance of melatonin in plants. It is the hope of the author that the current summary will serve as a stimulus for scientists to join the endeavor of clarifying the function of this phylogenetically-ancient molecule in plants and particularly in reference to the mechanisms by which melatonin mediates its multiple actions.

Biography

Russel J Reiter is a Professor in the Department of Cellular and Structure Biology at the University of Texas Health Science Center, USA, He has received three honorary MD degrees and one honorary DSc degree. He has received numerous awards for his research including the A. Ross McIntyre Gold Metal (USA) the US Senior Scientist Award (Germany), Lizoni Lincee Award (Italy), the Inaugural Aaron B. Lerner Pioneer Award (FASEB, USA), etc. His scientific publications have been cited in the scientific literature more than 83,000 times; his h-index is 140. Thomson's Institute lists him as one of the World's Most Influential Scientific Minds-2014 and he is listed in the top 100 scientists in the world in terms of frequency of citation in the fields of Cell Biology and Biochemistry. He is the Editor-in-Chief of the *Journal of Pineal Research* (2013 impact factor=7.81) and he is or has been on the Editorial/Advisory Board of 26 other journals.

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