Animal hormone is involved in plant stress memory

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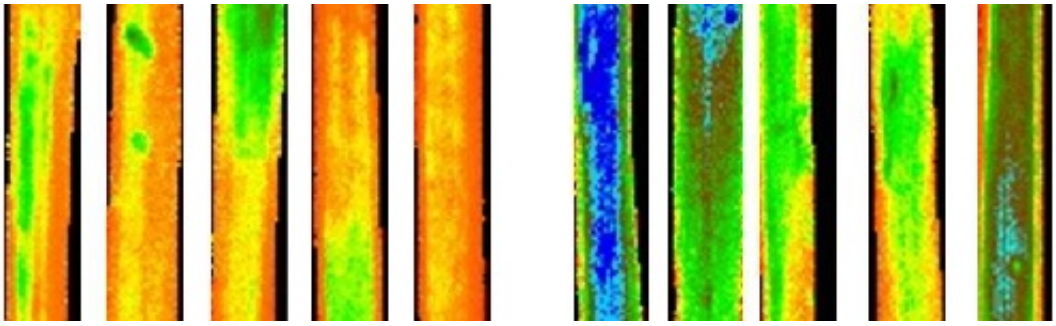


Interactive effects of melatonin and abscisic acid (ABA) on dark-adapted image of maximum quantum efficiency of photosystem II (FV/FM) for top barley leaf of four-leaf stage seedling under cold stress. Credit: University of Copenhagen

Regulating melatonin production in plants via drought priming could be a promising approach to enhancing abiotic stress tolerance of crops in future climate scenarios. The findings have just been published by Journal of Pineal Research.

The well-known hormone melatonin is not just promoting sleep in humans and animals but is also involved in stress tolerance in plants.

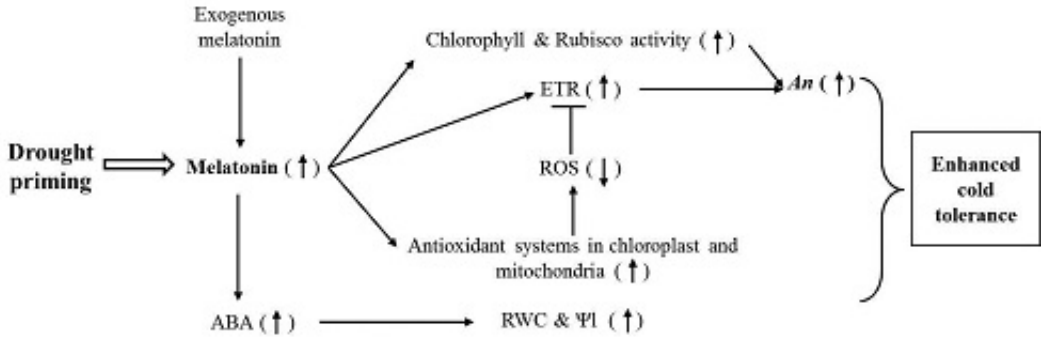
And Crop Physiologists from the Department of Plant and Environmental Sciences at the University of Copenhagen has now documented the roles of melatonin in drought priming and stress memory in barley, together with The University of Texas Health Science

Center at San Antonio, USA.

The results from their study suggest that exogenous melatonin application enhances the drought priming induced cold tolerance by modulating sub-cellular antioxidant systems and the level of the plant hormone abscisic acid in barley. Abscisic acid plays an important part in plant responses to environmental stress, as it for example slows plant growth to protect it from the cold conditions in the winter.

Post doc and first author Dr. Xiangnan Li and Associate Professor Fulai Liu, the senior author of the article, both from Department of Plant and Environmental Sciences at the University of Copenhagen, see great perspectives in their findings:

"Regulating melatonin production in plants via drought priming could be a promising approach to enhancing abiotic stress tolerance of crops in future climate scenarios."



Global presentation on interaction of melatonin and ABA in drought priming induced cold tolerance in barley. Ψl, leaf water potential; ETR, electron transport rate; ROS, reactive oxygen species; RWC, relative water content; An, photosynthetic rate. Credit: University of Copenhagen

More information: Xiangnan Li et al, Melatonin enhances cold tolerance in drought primed wild type and abscisic acid-deficient mutant barley, *Journal of Pineal Research* (2016). DOI: 10.1111/jpi.12350

Provided by University of Copenhagen