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Relationship between Circadian Clocks and Stress Responses to Salt or Dehydration in Higher Plants: What is the Meaning of Circadian Expression of Genes That are Responsive to Salt- or Dehydration-Stress ?

Tomohiro Kiyosue

Kagawa University

Summary

The LOV kelch protein 2 (LKP2) comprises three functional domains: the LOV, F-box, and kelch repeat. The LOV domain is involved in blue light perception and protein-protein interaction. The F-box motif is included in SCF complex, and the kelch repeat is a protein-protein interaction module. *Arabidopsis* plants that overexpressed LKP2 cDNA exhibited elongated hypocotyl under light conditions, delayed flowering time under long-day conditions, and arrhythmia under continuous light or dark conditions. In this study, whether overexpressor of LKP2 affect other phenomena, we used DNA microarray analysis to identify genes with altered expression levels in the LKP2 overexpressor. Microarray analysis revealed that the expression levels of some of the genes were altered in the LKP2 overexpressor as compared to the expression levels in the wild type. In addition, the upregulated genes included some plant hormone-responsive and stress-responsive genes. In order to examine the effect of LKP2 overexpression in stress responses, we assessed the expression levels of stress-responsive genes and stress tolerance in the LKP2 overexpressor.