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A PtDRG1, desiccation response gene from *Pyropia tenera* (Rhodophyta) exhibits chaperone function and enhance abiotic stress tolerance**Dong Woog Choi**

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Pyropia are commercially valuable marine red algae that grow in the intertidal zone and extremely tolerant to desiccation stress. We identified and reported the desiccation response genes (DRGs) based on comparison of the transcriptomes of *P. tenera*. Among them, *PtDRG1* encodes a polypeptide of 22.6 kDa that located in chloroplast. *PtDRG1* does not share sequence homology with known genes in public database except for several red algae species. Transcription of the *PtDRG1* gene was upregulated by osmotic stress induced by mannitol or H₂O₂ as well as desiccation stress but did not respond to heat. When *PtDRG1* was over-expressed in *Escherichia coli* and *Chlamydomonas*, the transformed cells grew much better than control cells under high temperature as well as osmotic stress induced by mannitol and NaCl. In addition, *PtDRG1* significantly reduced the thermal aggregation of substrate protein at heat stress condition. These results demonstrate that *PtDRG1* have a chaperone function and plays a role in tolerance mechanism for abiotic stress in *Pyropia*. This study shows that red algae have unknown stress proteins such as PtDRG1, and that these proteins have chaperon function and play a role in stress tolerance in red algae as stress proteins such as dehydrin work in green plants.

Biography

Dong Woog Choi has completed his PhD from Seoul National University, South Korea and Postdoctoral studies from University of California at Riverside, USA. He is the Professor in the Department of Biology Education, Chonnam National University, South Korea.

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