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TRANSCRIPTOME BASED CHARACTERIZATION OF *CHLAMYDOMONAS* CELLS WITH HEAT TOLERANCE BY OVEREXPRESSION OF *PSHSP70D*

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Heat Shock Proteins (HSP) are key components contributing to survival in the abiotic stress response. We isolated six cDNAs encoding PsHSP70 from *Pyropia seriata*, marine red algae (Rhodophyte). Especially, PsHSP70D transcripts were increased quickly by high temperature treatment. When the PsHSP70D was introduced and overexpressed in single cell green algae, *Chlamydomonas*, transgenic cells show much higher rates of survival and growth than those of the wild-type under high temperature conditions. These results demonstrate that PsHSP70D changes protein activation or transcription of the gene, which are involved in high temperature tolerance in *Chlamydomonas*. To gain the gene information for heat tolerance mediated by HSP70, we performed comparative transcriptome analyses between wild type- and transformed-*Chlamydomonas* overexpressing the PsHSP70.

About 45 Gb transcriptome sequences were generated from samples (in triplicate each), a wild type cells at control and high temperature condition, and transformed *Chlamydomonas* cells at control condition, and mapped to *Chlamydomonas* reference genome. Total 251 genes were up-regulated, and 542 genes were down-regulated in transformed heat tolerant cells. Comparison of the transcriptome and analysis result of the selected Differentially Expressed Genes (DEGs) identified will be presented.

Biography

Dong Woog Choi he is expertise in the field of plant system engineer and he work as a Professor at Chonnam National University, South Korea.

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