E227 Effects of Cold Temperature on the H^+-ATPase mRNA Level and Its cDNA Cloning by RACE.

NOH Ji Yeun*, YANG Yong Il, and BAI Dong Gyu
Dept. of Biology, Chonnam Nat'l Univ. Kwangju 500-757

The plant plasma membrane H^+-ATPase plays a central role in the physiology and bioenergetics of the plant cell. Activity of H^+-ATPase is known to increase by hormonal treatments or by cold temperature in the cold acclimating plants. It is not known whether its increased activity by cold temperature is resulted from the enhanced gene expression or resulted from its structural modifications caused by the changes of plasma membrane components. We have examined the effects of cold temperatures and phytohormone abscisic acid (ABA) on the accumulation levels of H^+-ATPase mRNA in the leaves and roots of cold sensitive cucumber and more or less cold resistant figleaf guard. H^+-ATPase mRNA was accumulated to a much higher level in roots of cold or ABA treated figleaf guard and cucumber than that of control. By comparing the enzyme activities and H^+-ATPase mRNA levels, we suggest that H^+-ATPase activity of the cold treated root tissues seems to be enhanced by the structural changes of plasma membrane, specially in cucumber. We also cloned H^+-ATPase cDNA of cucumber and figleaf using a RACE method.

E228

Characterization of Phycobilisome mutant of Cyanobacterium Synechocystis PCC 6803

In-Hye Oh* and Young-Mok Park[1]
Department of Biology, Pai-Chai University
Korea Basic Science Institute[1]

Genes for Histidine kinase was knocked out by target mutation in cyanobacterium Synechocystis PCC 6803. The mutant were olive-green in color. The whole-cell absorption spectra of WT(wild-type strain) has two peaks of 630 and 685 nm, but that of mutant has only one peak of 685 nm. The content of phycobilisome in mutant is 1/10 of that in WT. The content of allophycocyanin in the mutant is almost the same as that in WT on chlorophyll basis. But the content of phycocyanin is about 1/10 of WT. When phycobiliprotein (PBP) in WT cells were excited at 580 nm at 77 K fluorescence was observed from PC, APC , PSII and PSI. When PC in the mutant cells were excited, fluorescence from PC and APC was undetectable and the PSII and PSI fluorescence emission was greatly reduced.