E206 Genes related to the lipid body metabolism are prematurely induced in the viviparous maize embryos.

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In higher plants, normal seeds undergo a complex maturation process marked by the arrest of embryo growth and repression of the hydrolase activities in aleurone, and abscisic acid(ABA) plays a key role in these processes. Maize embryos of viviparous-1 mutant(*vp1*) have reduced sensitivity to ABA, resulting in precocious germination. Hydrolase genes including α-amylase and lipase, related to lipid body utilization, are induced in the normal germinating seeds. Here, we showed that genes, lipase, catalase-2, acethyl coA thiothylase and SAM decarboxylase, were induced in developing vp1 mutant embryos and thereby appeared to be involved in storage lipid metabolism accumulated in scutellum, which might finally support precocious germination. These cDNA clones were isolated by screening a library with the respective polyclonal antibodies, and nucleic acid sequence homology between other plants were compared. Transcript levels of these genes in normal and *vp1* developing embryos, and also germinating embryos were analyzed by RNA blot.

E207 Cloning and Characterization of the Fatty Acid Desaturase and H^+-ATPase cDNAs and Genes from Cucumber and Figleaf Guard Roots

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Genomic and cDNA clones for the omega-3 fatty acid desaturase(*fad*) were isolated from cucumber and figleaf guard roots. Genomic and cDNA library were screened with a partial cDNA probe amplified by RT-PCR with the primers of the redundant sequences. Also, genomic and cDNA clones encoding a plasma membrane H^+-ATPase in the same plants were isolated using a same method. Amplified partial cDNAs showed over 80 % homology in the nucleic acid sequenses with *Arabidopsis thaliana* H^+-ATPase cDNA and 75% homology with *Brassica napus fad7* cDNA. H^+-ATPase acivity was known to be increased during cold hardening process in the cold resistant plants, and it was also known that cold tolerance was enhanced by expression of a *fad* gene in a transgenic tobacco. We characterized the expression patterns of the plasma membrane H^+-ATPase and *fad* gene during cold treatment in a cold sensitive cucumber and cold tolerant figleaf guard root: Levels of the H^+-ATPase and *fad* mRNA in the figleaf guard roots were increased by cold treatment for 3 to 6 days, but levels of those mRNA were reduced in case of cucumber roots compared to control. From these results we anticipate that cold intolerance of cucumber may be related to these gene activities.