

**D205** Hot Pepper (*Capsicum annuum* L.)  $\alpha$ -Tubulin : cDNA Cloning and Differential Expression of Transcripts During Fruit Development

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Several  $\alpha$ -tubulins coding cDNA clones isolated from *Capsicum annuum* L. fruit cDNA library. The cDNA sequences of coding and non-coding regions of this clones showed that they classified into two different  $\alpha$ -tubulin isotypes. The result of hybridization of genomic DNA to  $\alpha$ -tubulin coding region probe and 3' non-coding region probe which were specific to each isotype indicated that *Capsicum annuum* L.  $\alpha$ -tubulin gene family contained at least three members. The transcript accumulation pattern of each isotype was different during fruit development and differed at several organs.  $\alpha$  I isotype predominated in immature, rapidly dividing fruit developmental stages and stem organ preferentially.  $\alpha$  II isotype transcript appeared relatively more in mature, slowly dividing fruit and equally accumulated in any organs. Each isotype contains several cDNA clones that only differs in number of putative polyadenylation signal and length of 3' non-coding region. The sequence of genomic DNA that corresponding to 3' non-coding region of each isotype was identical to that of cDNA. Therefore, this result shows that *Capsicum annuum* L.  $\alpha$ -tubulin mRNA does not undergo regulated poly(A) site selection unlike mammal and viral mRNAs.

**D206** Isolation and Characterization of Glutathione S-Transferase cDNA Clone in *Capsicum annuum* L.

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A cDNA clone, CaGST encoding glutathione S-transferase was isolated by random sequencing of cDNA library prepared from mRNA of developing hot pepper (*Capsicum annuum* L.) fruits. Nucleotide sequence analysis of CaGST revealed that it had an open reading frame of 1007 bp which encoded a polypeptide with a molecular weight about 30 kD. The protein has a capacity of protecting cells from dying in toxic substances. Southern blot analysis suggested that CaGST might exist in the form of multiple copies in pepper genome. CaGST mRNA expression level was higher in leaf and root than in green and red fruit. The environmental stresses increased the level of CaGST mRNA expression. Especially, NaCl, indoleacetic acid (IAA), and paraquat drove those results, but cold stress had no effect of expression of CaGST mRNA. From the these studies, it suggests that CaGST gene may be a resistance gene against environmental stresses such as NaCl, IAA, and paraquat.