EXPRESSION AND CHARACTERIZATION OF TWO UBIQUITIN-CONJUGATING ENZYME GENES IN *GOSSYPIUM HIRSUTUM*

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Abstract

Two cDNA clones designated *GhUBC1* and *GhUBC2* encoding ubiquitin-conjugating enzymes (E2s) have been isolated from a cotton (*Gossypium hirsutum L. Cultivar* St213) root cDNA library. They encode Class I E2s of 148 amino acids (aa) with calculated molecular masses of 16 kDa. The encoded *Gh*UBC1 and *Gh*UBC2 proteins are 98% identical to each other, and 78-96% identical to *Arabidopsis thaliana At*UBC8-10, *Oryza sativa Os*UBC, and *Saccharomyces cerevisiae Sc*UBC4-5 at the aa sequence level. The homology to *Sc*UBC4-5 suggests that *Gh*UBC proteins are probably involved in the selective degradation of abnormal and short-lived proteins. Northern blot analysis revealed that *GhUBC1* and *GhUBC2* are expressed in roots, flowers, and fibers, with the highest level in roots. Genomic Southern analyses indicated that there are two members of the E2 subfamily in the cotton genome. The *GhUBC1* and *GhUBC2* genes were amplified by PCR from cotton genomic DNA and sequenced by the dideoxy chain termination method. Genomic origin analysis indicated that *GhUBC2* was present in the D subgenome of *Gossypium hirsutum.*

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