

CHANGES IN THE STARCH BIOSYNTHETIC ENZYMES IN THE ENDOSPERM OF DIFFERENT RICE CULTIVARS

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To understand the relationship between the starch biosynthetic enzymes and the quantity and quality of the synthesized starches, we investigated the expression patterns of the enzymes concerned with starch biosynthesis, such as granular bound starch synthase(GBSS), soluble starch synthase(SSS), ADP-glucose pyrophosphorylase(AGPase), starch branching enzyme(SBE), starch debranching enzyme(SDE) in rice endosperms. We have cloned cDNAs of these enzymes through RT-PCR and used them as probes to examine their expression patterns in rice endosperms with respect to the different species and different time of maturation. The expression patterns of the endosperm harvested at 12-13 days after flowering indicated that the cultivar of Arum Byeong belongs to Tongil hybrid expressed higher SBE than the cultivars of Junam Byeong, Dongjin Byeong, Sindongjin Byeong, Ilpum Byeong and Daisan Byeong belong to japonica subspecies, but the japonica subspecies, especially the cultivar of Sindongjin Byeong, expressed higher SDE than Tongil hybrid. Analysis of the content of starch amylose and amylopectin with respect to the expression patterns of these enzymes will provide a clue to understand the relationships between rice productivity and starch biosynthetic enzymes.