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The Change of the Sucrose-Phosphate Synthase (SPS) Activity in the Transgenic Rice Transformed with Cyanobacterial SPS

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Sucrose-phosphate synthase (SPS) is a key regulatory enzyme in sucrose synthesis. Transgenic rice plants expressing cyanobacterial SPS were produced to investigate the role of SPS in carbon partitioning. A cyanobacterium Synechocystis sp. Strain PCC 6803 gene encoding SPS was introduced into pMJU vector and then transformed into rice callus using Agrobacterium. Four T_1 rice lines were regenerated; the integration and the expression of the gene were respectively confirmed by Southern blot and Northern blot analysis. The growth pattern of the T_1 rice lines did not show any phenotypical changes when compared with the wild type. Two T_1 lines showed increased SPS activities, implying that carbon metabolites might be changed in these two lines. The level of various carbon metabolites will be further analyzed.