vector for glutelin into the genome of transgenic rice plants. RNA gel blot analyses indicated that endogenous glutelin gene was severely suppressed in transgenic rice, whereas it was fully expressed in non-transgenic rice. Reverse transcriptase-mediated PCR revealed that glutelin multigene family was suppressed. Western blot analysis showed that the relative accumulation level of RFP in glutelin RNAi seeds was two times of it in the only RFP transgenic seeds. These results suggest that RNAi technology for endogenous storage protein could be of great utility to favor high expression of transgene.

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(O4-03)

Functional analysis of sweetpotato peroxidase gene, *swpa4*, in transgenic tobacco under various stress

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Secretory class III peroxidases (POD, EC 1.11.1.7) catalyze the reduction of H_2O_2 by taking electrons from various donor molecules. It has been implicated diverse responses under various stress conditions, such as abiotic stress and biotic stress. In the previous studies, ten POD cDNAs were isolated from cell cultures of sweetpotato and their expression levels were characterized under environmental stresses. The expression of *swpa4* gene was strongly induced by treatment of oxidative stress, heavy metal and pathogenic bacteria. In this study, functional characterization of *swpa4* gene was done in transgenic tobacco plants. Transgenic tobacco plant expressing *swpa4* gene under the control of CaMV 35S promoter developed, and it showed 40-fold higher POD activity than non-transgenic (NT) plants. *swpa4* plant had enhanced protection against oxidative stress treatment such as methyl viologen (MV) and hydrogen peroxide (H_2O_2). In 2 μM MV treatment, *swpa4* plant showed about 20% less ion leakage and 16% higher amount of chlorophyll than NT plants. In addition, *swpa4* plants showed higher protection against 200 mM H_2O_2 treatment than NT plants. Interestingly, expression of some pathogenesis-related (PR) gene, such as PR-2 (β-1, 3-glucanase), were increased in *swpa4* plants, suggesting that *swpa4* plants have tolerance against pathogenic bacteria. These results suggest that *swpa4* gene have important roles in adaptation of plants to various environmental stresses including abiotic and biotic stresses.

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