

PB-28

Overexpression of *PsGPD* from *Pleurotus sajor-caju* Enhances Tolerance to Salt Stress in Rice

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[Introduction]

Plants often face a variety of biotic and abiotic stresses that influence their development, growth and productivity. Salt stress is particularly an important abiotic stress that seriously affects plant growth and development.

Rice (*Oryza sativa* L.) is one of the major staple food crops the world. Moreover, the rice genome has been sequence and rice can be easily transformed.

[Material and Methods]

Each transgenic and wild type plants were transplanted in soil pot and grown for 5 weeks in the greenhouse (16 h light/8 h dark cycle) at 30°C.

Salt stress was imposed by sequentially with water containing 200 mM of NaCl for 7 days and re-watering for 6 days.

[Results and Discussion]

Transgenic potatoes expressing PsGPD gene, isolated from the oyster mushroom, *Pleurotus sajor-caju*, had increased tolerance to salt stress. The over-expression of *PsGPD* in PsGPD-OX transgenic rice was confirmed by quantitative RT-PCR and western blot analysis. To elucidate the role of *PsGPD* in stress tolerance, responses of PsGPD-OX transgenic rice plants to salt stress conditions were examined. PsGPD-OX #5, #6, and #17 lines were treated with salt stress on MS medium containing 100 mM or 200 mM of NaCl for 5 and 14 days. Morphological analysis revealed differences between the wild-type rice and the three transgenic PsGPD-OX rice. The germination rates of the three transgenic PsGPD-OX lines of rice were significantly higher than that of the wild type rice, indicating that they were more tolerant to 200 mM NaCl than the wild type rice. In addition, the three transgenic PsGPD-OX rice lines had significantly longer length of root and shoot compared to the wild type rice. These results suggested that overexpression of *PsGPD* improve more tolerance to salt in rice.

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