

Increased tolerance to cold stress in transgenic *Arabidopsis Thaliana* expressing glucose oxidase of *Aspergillus Niger* /

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ABSTRACT

Hydrogen peroxide (H₂O₂) is thought as the signaling factor of plants under stress in a number of regulatory mechanisms to improve stress tolerance. In general, extreme temperature often adversely affects crop productivity resulting in the shortage of human food supply. However, it is still unclear the endogenous hydrogen peroxide would also improve the cold-tolerance of plant. In order to understand the role of hydrogen peroxide in plant under low temperature stress, and the molecular mechanism to increase plant cold-resistant performance, the transgenic plants were constructed that glucose oxidase (GO) gene was under the control of cauliflower mosaic virus (CaMV) 35S constitutive promoter and glucose oxidase could activate endogenous hydrogen peroxide production. The cold-tolerance of the transgenic plants was investigated in comparison with the wild type plants for survival and leakage rates. The results suggested that transgenic plants exhibit enhanced cold-tolerance. Based on relative genes expression study the molecular mechanism was also discussed.

Keywords : glucose oxidase、cold stress、hydrogen peroxide、*Arabidopsis thaliana*

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