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## **The NILs from an interspecific cross show enhanced plant height and antioxidant activity**

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### **Abstract**

A high-resolution physical map targeting a cluster of yield-related QTLs on the long arm of rice chromosome 9 was constructed across a 35.5kb region containing the six predicted genes including the probable ascorbate peroxidase (*OsApx*). The BC<sub>3</sub>F<sub>6</sub> near isogenic lines (NILs) were derived from a cross between the *Oryza sativa* Hwaseong and *O. rufipogon*. The plant height and length of internodes were compared between Hwaseong and NILs. There were significant differences in plant height between Hwaseong and NILs. The NILs internodes were longer than Hwaseong, showing dramatic elongation in the first and fourth internodes; thereby, leading to increased plant height. The antioxidant activity of Hwaseong and NILs was also analyzed by 3,3-diaminobenzidine (DAB) staining and 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay. In order to understand whether or not *OsApx* gene is important in scavenging H<sub>2</sub>O<sub>2</sub> in rice, DAB staining was used. Intense dark-brown coloration was observed in Hwaseong than NILs. In addition, DPPH scavenging ability of Hwaseong showed lower value than NILs. These results indicated that the internode elongation and antioxidant activity might possibly be controlled by *OsApx*. To know the causative relationship of the gene and phenotype, we will further analyze the gene expression and use it for functional studies by complementation transgenic approach. This work was supported by the grant from the Next-Generation Biogreen 21 Program for Agriculture & Technology Development (Project No. PJ011048012017), Rural Development Administration, Republic of Korea.

Keywords: Rice, Near isogenic lines, internode elongation, antioxidant activity

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