

Cloning and analysis of cadmium-stress related genes in wheat (*Triticum aestivum*)

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Cadmium is a non-essential element for plant growth and is highly toxic. Compared with other heavy metals, cadmium (Cd^{2+}) is more easily absorbed and accumulated by wheat, thus causing health risks. Therefore, it is of great significance to study the function of wheat resistance to cadmium stress genes. β -amylase (BaM) is a key enzyme in plant metabolism of sugar-starch. Many studies have shown that the BaM gene family of plants has an important relationship with plant resistance to abiotic stress. Plants that silenced the BAM5 gene from the cadmium-treated RNAi arabidopsis mutant library showed increased abiotic stress compared to controls. In this study, the related β -amylase 5 gene sequence in wheat NCBI database was used to design specific primers, and the TaBaM5 gene of wheat was successfully cloned, and the related bioinformatics software was used for preliminary analysis. TaBaM5 to study gene function in plants, this study will pCAMBIA1301-BaM5 plasmid agrobacterium-mediated transformation, using agrobacterium infect arabidopsis, research TaBaM5 a gene expression influence on growth of arabidopsis thaliana, the photosynthesis and transpiration of the transgenic plants and the change of the cadmium content compared with wild type plants, the future will continue to complete the follow-up experiments, this study for further research on wheat TaBaM5 gene function to provide experimental basis, in order to promote the production of crops to lay a solid foundation. Key words: Wheat, Cadmium, TaBaM5