

Cadmium toxicity, tolerance and accumulation in plants- A Case Study on Barley

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Cadmium is a non-essential, toxic heavy metal for plants, animals and humans. Genotypes with low grain Cd accumulation and Cd tolerant were successfully screened from 600 barley genotypes. Physiological mechanism for genotypic differences in Cd accumulation and tolerance in barley was elucidated via characterizing physiochemical characters, including Cd uptake and subcellular distribution, photosynthesis, free amino acid, phytochelatin, an atomic structure, ATPase, reactive oxygen species (ROS) metabolism and other physio-chemical responses. Furthermore, stress-specific proteins and relevant genes associated with Cd tolerance were identified. QTLs were detected for root Cd concentration and Cd tolerance index (CTI) of shoot dry weight, root glutathione peroxidase and dehydroascorbate reductase. Meanwhile, ZIP genes (ZIP3, ZIP8) were isolated from low and high grain Cd accumulation barley genotypes, respectively, and incorporated into barley plants (Golden Promise) using a *Agrobacterium* transformation. In addition, we investigated the effects of Zn, GSH, NO and ASA on alleviating Cd stress, indicating that rational Zn, GSH, NO, or/and Se application could alleviate Cd toxicity to plants and reduce Cd uptake and accumulation.

Biography:

Dr. Prof Feibo Wu has completed her PhD in 2003 from Zhejiang University (ZJU). She is the Deputy Director of Crop Science Institute of ZJU. Her main research interest is evaluation and identification of plant germplasm, mainly in barley, resistant/tolerant to abiotic stresses and its molecular physiology, and phytoremediation of metal-contaminated environments and safe crop production. She has published 97 papers in reputed SCI-JOURNALS and has been serving as an editorial board member of Plant Growth Regulation.