

Cadmium-induced oxidative stress in *Arabidopsis*

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We have developed an EMS-induced Cd resistant type (RT) from wild type *Arabidopsis thaliana* (Colombia), and investigated Cd-induced oxidative stress symptoms such as lipid peroxidation, production of hydrogen peroxide and activities of antioxidant enzymes including superoxide dismutase (SOD), catalase (CAT) and ascorbate peroxidase (APX). Compared to wild type (WT), RT showed the improved survival of seedlings on MS media containing up to 500 μ M of cadmium, and showed lower lipid peroxidation (as a malondialdehyde formation) and hydrogen peroxide production, higher activities of SOD and APX and lower activity of CAT. Further, RT-PCR of SOD isoforms such as Mn-SOD, Fe-SOD and Cu/Zn-SOD showed no difference among isoforms on transcriptional levels, whereas protein patterns showed more persistent production of both Mn-SOD and Fe-SOD with the levels of Cd exposure. Our results suggest that SOD might be impaired at translational level and is a critical enzyme to quench oxygen radicals induced by Cd stress, and the activities of enzymes (such as APX) involved in the glutathione-ascorbate cycle to remove hydrogen peroxide are also critical to survive in an environment enriched with cadmium.

Keywords: *Arabidopsis*, cadmium, oxidative stress