

**ANTIOXIDANT RESPONSE SYSTEM AND CHLOROPHYLL FLUORESCENCE
IN CHROMIUM (VI)- TREATED ZEA MAYS L. SEEDLINGS**

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The effects of different concentrations of Cr(VI) (1 μ M, 10 μ M, 100 μ M) applied for 7, 14 or 21 days on initiation of high lipid peroxidation level (POL) and consequent changes in the enzymatic-antioxidant protective system and minimization of photosystem II (PSII) activity were studied in maize seedlings. Chromium(VI) caused an increase in the electrical conductivity of the cell membrane, and malondialdehyde (MDA) content (a peroxidation product) reflected peroxidation of membrane lipids leading to the loss of the membrane's selective permeability. It also induced distinct and significant changes in antioxidant enzyme activity. Versus the control, superoxide dismutase (SOD, EC 1.15.1.1.), catalase (CAT, EC 1.11.1.6.) and peroxidase (POD, EC 1.11.1.11.) activity in maize seedling roots and leaves was progressively enhanced by the different Cr(VI) doses and stress periods, except for decreases in SOD and POD activity in leaves exposed to 100 μ M Cr(VI) for 21 days. The different Cr(VI) concentrations changed chlorophyll (chl) content differently. The 10 μ M and 100 μ M doses of Cr(VI) decreased the chl *a/b* ratio and quenched the chl *a* fluorescence emission spectra. These effects reflect disturbance of the structure, composition and function of the photosynthetic apparatus as well as PSII activity.

Key words: Chromium(VI), lipid peroxidation, antioxidant protective system, chlorophyll fluorescence, maize.