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The Impact of mercuric toxicity in saline soil on growth and some of enzymes in Turnip (*Brassica rapa* L.)

Heavy metals are a major environmental problem and have many concerns as carcinogenesis, non-degradability and biological accumulation. Major part of these metals are absorbed by plants and leads to inactivation of some enzymes, decreased protein production and disrupting variety of reactions and many cellular functions and growth and development stages. Different species of plants facing various environmental stresses, show thereby different physiological responses. Mercury (Hg) is a heavy metal causing oxidative stress in plants. Saline soil in pots were treated with three levels of Hg (0, 75 and 150 mg/l) by using mercuric chloride salt 10 days after planting (plants at three leaf stage). The experiment was conducted as factorial in a completely randomized design with three replications. 60 days after planting, leaf samples were collected and investigated for photosynthetic pigments, soluble sugars, activity of peroxidase and catalase enzymes and chlorophylls a and b and carotenoids, soluble sugars in plant. Plants were harvested 70 days after sowing, and root and shoot fresh and dry weights and mercury concentration in root and shoot of turnip (*Brassica rapa* L.) were determined. The results showed that the maximum concentration of mercury occurred in roots followed by shoots. Soluble sugars in shoot were increased significantly, leaf chlorophyll a, b and total chlorophyll contents in 75 and 150 mg/l mercury treatments were significantly reduced compared to control. Carotenoid content and activity of catalase and also peroxidase activity in leaf with mercury levels of 75 and 150 mg/l treatments decreased significantly compared to control. But dry weight of shoots and roots were decreased with increasing mercury levels compared to control.

Keywords: Mercuric toxicity, photosynthetic pigments, peroxidase, Turnip.