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The Effect of Different Concentrations of Trichoderma harzianum Fungus on the Phytochemical and Antioxidative Parameters of Cauliflower (Brassica oleracea convar.botrytisl) in Soils Contaminated with Lead

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Abstract : Today, the increasing contamination is an environmental concern. There is relationship between plants and microorganisms many years ago. In this regard, an experiment was conducted in order to investigate the effect of different levels of lead across three levels 'zero, 50, and 100 mg/L' and Trichoderma Harzanium fungus across three levels '5, 10, and 15%' in a factorial design in the form of fully randomized blocks in three replications under form conditions in the climatic conditions of Shahroud in Dehlama Village. This research was performed in 2014-2015 on cauliflower. In this experiment, chlorophyll a, b, total, cartenoid, phenol, flavonoid, and antioxidant properties of cauliflowers were measured. The results indicated that the greatest level of chlorophyll a (75.723 mg/wet weight), chlorophyll b (27.378 mg/wet weight), and total chlorophyll (109.074 mg/wet weight) was related to the interactive effects of 5% treatment of Trichoderma fungus and 0mg/L lead. The results also indicated that the greatest amount of antioxidant (79.88% of free radical) and flavonoides (22.889 mg of coercetin/g of dry weight) was related to the interactive effects of lead 50 mg/L and the treatment of Trichoderma fungus 5%. Further, the greatest level of phenol (21.33 mg of Gaelic acid/ dry weight) was related to the interactive effects of lead 100 mg/L and Trichoderma fungus 5% . As carotenoids are a type of antioxidant and precursor of vitamin A, with the development of alignment effect with other antioxidants such as the total phenol, flavonoid, achieved desirable levels of antioxidant.

Keywords : antioxidant, lead, flavonoid, cauliflower, chlorophyll
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