

## Effects of heavy metals of chromium on growth and antioxidant activities of *Portulaca oleracea* L.

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### Abstract

*Portulaca oleracea* L. (purslane) is a local plant in Iran that can easily breed. Chromium is a heavy metal that causes toxicity for the growth and development of plants. To study the effects of potassium dichromate on growth, indexes of oxidative stress and enzymatic and non-enzymatic antioxidant properties of purslane an experiment was done in a randomized design with three replications of five levels (0, 25, 50, 75 and 100 ppm) in a greenhouse. After 60 days all parameters was assayed. According to the results, Along with increasing concentrations of chromium, malondialdehyde (MDA) and H<sub>2</sub>O<sub>2</sub> was increased, and followed by the enzymatic antioxidant such as catalase (CAT), peroxidase (POX) and non-enzymatic antioxidant (phenolic compounds) was increased to compensate the effect of oxidant compounds. But, Heavy metal negatively affected on growth. Therefore, the destructive effects due to chromium stress with increasing the activity of enzymatic and non-enzymatic antioxidant system in purslane was minimized. Based on these results, purslane can be introduced as a good candidate for tolerance to heavy metal of chromium.

**Keywords:** Chromium, H<sub>2</sub>O<sub>2</sub>, Growth parameters, Phenolic compounds, Catalase, Ascorbate peroxidase, Peroxidase, Purslane.