

Abstract

Portulaca oleracea L. is one of the best medicinal plants in the world and it has a chemical composition that is variable from in bioactive substances. In this research, the effects of humic acid on growth, yield and some physiological, biochemical (photosynthetic pigmentation), accumulation of compatibility metabolites (Proline and Carbohydrates) and anti-oxidant activity of *Portulaca oleracea* L. were studied in Sistan region. The treatments includes humic acid application at four leaf stage and in four levels: zero (control), one, two and three Kg ha⁻¹. The total phenolic contents of the methanolic extracts were determined by Folin–Ciocalteu method and antioxidant activity was evaluated using 2,2-dimethyl-1-picril hydrazil (DPPH) assay. The Statistical results showed significant of humic acid on growth, physiological parameters and anti-oxidant activity. In evaluating the anti-oxidant activity of pherarium, treatment with one kg ha⁻¹ of Humic acid caused the highest anti-oxidant activity in leaves and stems (73.88 and 83.91). It was determined that the anti-oxidant effect of stem is greater than leaf. The highest Chlorophyll a in leaf and stem (7.96 and 0.882 mg/g green leaves), the highest Chlorophyll b in leaves and stems (2.97 and 0.386 mg/g green leaf) The highest of Anthocyanin in leaf and stem (0.671 and 0.225 mg/g green leaves), the highest of Carbohydrates in leaf and stem (108.88 and 38.02 mgg⁻¹ green leaf), the highest of Flavonoids and the highest total phenol leaf and stem (25.16 and 16.35 mM/g dry leaves) was observed in leaf and stem (152.45 and 61.2 μM/g dry leaves), the highest percentage of oil in seed, leaf and stems (130.25, 2.96 and 0.70%) and the lowest content of proline in leaves and stems of two kilograms per hectare humic acid was obtained.

Keywords: Humic acid, *Portulaca oleracea* L., Physiological parameters, Antioxidant Activity.



University of Zabol

Graduate school

Faculty of Science

Department of Biology

The Thesis Submitted for the Degree of M.SC (in the field of Physiology)

Title:

**Effect of different levels of humic acid on growth and physiological parameters
of Purslan (*Portulaca oleracea* L.)**

Supervisor:

Dr. Sh. Najafi

Advisors:

Dr. S. Esmailzadeh Bahabadi

By:

M. Keshtgar Mola Shahi

SEP 201