Effect of putrescine and salinity on morphological and biochemical traits and pigment content of marigold plant (*Calendula officinalis* L.)

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Abstract

In order to evaluate the effects of salt stress and putrescine on some morphological and biochemical traits and pigment content of pot marigold plant, an experiment was conducted under greenhouse conditions based on completely randomized design, using four levels of sodium chloride (1, 3, 6 and 9 dS/m) and three levels of putrescine (0, 1 and 2 mM). Sodium chloride was applied on the soil, while putrescine solution was sprayed on the leaves. Results showed that salt stress reduced all growth parameters and pigment content significantly, while increased the amount of reduced sugars in leaves and roots. Application of putrescine had significant effect on all biochemical parameters and pigment content; but had no effect on the number and diameter of flowers. Spraying of 2 mM putrescine, under salt stress level of 9 dS/m, increased fresh flower weight, shoot dry weight, chlorophyll a, total chlorophyll, leaf cartenoides and reduced sugars by 29, 27, 35, 32, 17 and 15 percent, respectively, compared to control treatment. Based on the results of this experiment, it was concluded that application of putrescine improves the growth, biochemical traits and pigment content of marigold plant under salt stress conditions.

Keywords: Polyamine, Salinity, Pigments, Reduced sugar.

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