عنوان مقاله:

Effect of Cadmium on Germination Characters and Biochemical Parameters of Two Iranian Ecotypes of Cumin (Cuminum cyminum L.)

محل انتشار:

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خلاصه مقاله:

Cadmium (Cd), being a highly toxic metal pollutant of soils, it inhibits root and shoot growth and yield production, affects nutrient uptake and homeostasis. It is frequently accumulated by agriculturally important crops and then enters the food chain with a significant potential to impair animals and human's health. Therefore, a study was conducted to evaluate the effects of various Cd levels (۰ as control, ۳۰۰, ۴۵۰, ۶۰۰, ۷۵۰ and ۱۰۵۰ µM) on some growth and biochemical parameters of two Iranian ecotypes of cumin (Cuminum cyminum) seedlings. The results revealed that seed germination, root growth, chlorophyll content and total soluble protein of both ecotypes decreased significantly with increase in metal concentration. The proline showed an increase in lower concentrations of Cd but at higher concentrations it decreased. The present results allow us to conclude that the cumin plants adversely affected by cadmium toxicity. Decrease in the seed germination percentage, root growth, chlorophyll and protein content may be considered as circumstantial evidence for the toxicity of cadmium. The present study demonstrated that under cadmium stress, C. cyminum underwent biochemical changes to survive under high concentrations of this metal. Increase in metal chelate components (proline) proves this fact. It can be concluded that Isfahan ecotype was superior to Khorasan ecotype in most of the measured parameters and it can be suggested that Isfahan ecotype is more tolerant to Cd stress than Khorasan ecotype.

کلمات کلیدی:

Cadmium, Cuminum cyminum, Heavy metal toxicity, Physiological responses