

عنوان مقاله:

Trichoderma and spermidine improve cadmium tolerance and phytoremediation potential in purslane (*Portulaca oleracea* L.) plant

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خلاصه مقاله:

To better understanding, the physiological and biochemical mechanisms of *Trichoderma longibrachiatum* (TL) and spermidine (SPD) polyamine treatment on cadmium (Cd) tolerance phytoremediation in purslane (*Portulaca oleracea*) plant and the activity of anti-oxidants enzyme (CAT, APX, POX, SOD), hydrogen peroxide and proline content as well as determination cadmium accumulation in shoots, roots, soil and their ratio to each other, a factorial experiment was performed in a completely randomized design with three replications and three treatments. In the current study, mitigative roles of SPD and TL were assessed in Cd stressed *Portulaca oleracea* plants. SPD (1, 0.5, and 1 mM) was applied after 20 days of sowing on the branches and leaves of plants inoculated or without TL inoculating in the presence of Cd (0, 30, 60 and 90 mg.kg⁻¹). Cd stress and coexistence with TL increased the activity of antioxidant enzymes and leaf soluble protein in purslane plants. Also, the application of SPD, especially at 0.5 mM, resulted in a higher increase in leaf protein under cadmium stress in inoculated plants. Proline parameter responds differently to TL. SPD application reduced the severity of these changes. The amount of H₂O₂ was significantly reduced in plants when treated by both TL and SPD. Significant differences were observed between 0.5 and 1 mM of SPD in terms of the Cd uptake in the TL inoculated purslane shoots. Inoculated purslane plants treated by either 0.5 or 1 mM of SPD had lower Cd uptake and greater BF. In general, the results showed a synergetic effect between TL fungi and SPD application on improving the Cd phytoremediation in the purslane plant.

کلمات کلیدی:

Antioxidant enzymes, Cadmium toxicity, Phytoremediation, Purslane, Spermidine, Trichoderma, Antioxidant enzymes, Cadmium toxicity, Phytoremediation, Purslane, Spermidine, Trichoderma

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