

土壤肥料

铅、镉浸种对水稻幼苗生长和抗氧化酶的影响^{*}

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摘要 利用不同浓度的Pb(CH₃COO)₂和CdCl₂对水稻浸种, 研究Pb²⁺和Cd²⁺对水稻萌发和幼苗生长的影响, 测定不同浓度处理后种子发芽势、发芽率和幼苗生长情况以及叶片和根尖的SOD,CAT,POD等的活性。结果表明: 当Pb²⁺浓度小于 400 mg/L,Cd²⁺浓度小于 5 mg/L 时促进种子的萌发和幼苗的生长, 高出这个浓度时则表现出抑制作用; 当Pb²⁺浓度小于 400 mg/L,Cd²⁺浓度小于 5 mg/L 时, 抗氧化酶SOD,CAT和POD活性提高, MDA含量下降, 高出这个浓度时则相反; 根的生长和抗氧化系统对Pb(CH₃COO)₂和CdCl₂胁迫比茎叶更为敏感; 水稻对Cd²⁺的敏感程度要远大于Pb²⁺。

关键词 [水稻](#); [铅胁迫](#); [镉胁迫](#); [抗氧化酶](#)

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The Effects of Pb²⁺ and Cd²⁺ Stress on Rice Seedling Growth and Antioxidant Enzyme Activity

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Abstract

Different concentration of Pb(CH₃COO)₂ and CdCl₂ solution were used in the experiment to soak the rice seed in order to study the effect of Pb²⁺ and Cd²⁺ stress on rice germination and seedling growth, the germination vigor and germination percentage of seeds and seedling growth were measured, meanwhile SOD,CAT,POD activities of leaves and root tips were also measured. The result shows: when the concentration of Pb²⁺ was lower than 400 mg/L or when the concentration of Cd²⁺ was lower than 5 mg/L, rice germination and seedling growth were increased, when the concentration was higher, rice germination and seedling growth were decreased. Moreover when the concentration of Pb²⁺ was lower than 400 mg/L or when the concentration of Cd²⁺ was lower than 5 mg/L, SOD,CAT,POD activities were improved and MDA content was decreased, while the concentration of Pb²⁺ or Cd²⁺ exceeded the content mentioned above, the opposite is true; growth and antioxidant enzyme of roots were more sensitive than stems and leaves when stressed by Pb(CH₃COO)₂ and CdCl₂; rice was more sensitive to the stress of Cd²⁺ than Pb²⁺.

Key words [rice](#) [lead stress](#) [cadmium stress](#) [antioxidant enzymes](#)

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