

林学—研究报告

铬胁迫对罗汉果幼苗生理生化指标的影响

张永霞¹,石贵玉²,李霞³,张厚瑞²

- 1. 广西师范大学
- 2.
- 3. 农业资源研究中心, 中国科学院遗传与发育生物学研究所

摘要:

重金属铬对植物的生长发育有非常重要的抑制作用。但是至今为止还没有铬对我国特有药用植物罗汉果植物影响的生理生化机理研究的报道。本实验以罗汉果幼苗为材料,对生长在添加0、50、100、150、200 $\mu\text{mol}\cdot\text{L}^{-1}$ 浓度的重金属铬离子的培养基中生长15天的罗汉果幼苗的相关生理生化变化进行了详尽的分析变化。结果表明,随着铬离子浓度的增加,植株叶片的叶绿素含量、蛋白质含量、可溶性糖含量、超氧化物歧化酶活性、过氧化氢酶活性一直下降;过氧化物酶活性先上升后下降;相反,脯氨酸和丙二醛含量则一直上升。表明铬离子的毒害导致体内保护酶活性受到抑制,膜系统受到伤害,从而影响罗汉果幼苗生长。

关键词: 罗汉果 保护酶 生理生化 铬离子

Physiological and biochemical effects of chromium on *Siraitia grosvenorii* seedlings

Abstract:

Heavy metal chromium markedly inhibits plant growth and development. Although extensive studies have been conducted on the effects of chromium on other plant species such as wheat, the mechanisms of effects of chromium on *Siraitia grosvenorii* remain unknown. In this study, we analyzed the responses of *Siraitia grosvenorii* to various levels of Cr^{6+} (0, 50, 100, 150 and 200 $\mu\text{mol}\cdot\text{L}^{-1}$) at physiological and biochemical levels. The results showed that the contents of chlorophyll, protein, soluble sugar, activity of superoxide dismutase(SOD) and catalase were significantly decreased with increasing concentrations of chromium; the levels of peroxidase (POD) activity were increased at low concentrations of chromium and decreased when the plants were exposed to high concentrations of chromium. By contrast, the contents of proline and malonaldehyde(MDA)were substantially increased with increasing concentrations of chromium in the growth medium. The results indicate that chromium causes damage of the cellular membrane system and subsequent growth inhibition of *Siraitia grosvenorii* and proline and ROS signaling may play important roles in plant response to chromium.

Keywords: *Siraitia grosvenorii* Protective Enzymes Physiology And Chemistry Chromium

收稿日期 2010-06-03 修回日期 2010-06-24 网络版发布日期 2011-03-01

DOI:

基金项目:

国家自然科学基金

通讯作者: 张永霞 广西师范大学生命科学学院, 广西桂林541004

作者简介:

作者Email: zyx_915@126.com

参考文献:

本刊中的类似文章

扩展功能

本文信息

- Supporting info
- PDF(782KB)
- [HTML全文]
- 参考文献[PDF]
- 参考文献

服务与反馈

- 把本文推荐给朋友
- 加入我的书架
- 加入引用管理器
- 引用本文
- Email Alert
- 文章反馈
- 浏览反馈信息

本文关键词相关文章

- 罗汉果 保护酶 生理生化 铬离子

本文作者相关文章

- 张永霞
- 石贵玉
- 李霞
- 张厚瑞

PubMed

- Article by Zhang,Y.X
- Article by Dan,G.Y
- Article by Li,x
- Article by Zhang,H.R

