



冠菌素对棉花幼苗盐害的缓解效应

谢志霞^{1,2}, 李茂营¹, 杜明伟¹, 李召虎¹, 田晓莉¹, 段留生^{1*}

1. 植物生长调节剂教育部工程研究中心/中国农业大学农学与生物技术学院, 北京 100193; 2. 中国科学院遗传与发育生物学研究所农业资源研究中心, 石家庄 050021

Ameliorating Effect of the Phytotoxin Coronatine on Seedlings of Transgenic Insect-resistant Cotton Variety under Salt Stress

XIE Zhi-xia^{1,2}, LI Mao-ying¹, DU Ming-wei¹, LI Zhao-hu¹, TIAN Xiao-li¹, DUAN Liu-sheng^{1*}

1. Engineering Research Center of Plant Growth Regulator, Ministry of Education /College of Agronomy and Biotechnology, China Agricultural University, Beijing 100193, China; 2. Center for Agricultural Resources Research, Institute of Genetics and Developmental Biology, Chinese Academy of Sciences, Shijiazhuang 050021, China

摘要

参考文献

相关文章

Download: PDF (729KB) HTML 1KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要 以转基因抗虫棉(*Gossypium hirsutum* L.)中棉所45为材料, 通过水培试验研究了冠菌素对盐胁迫下棉花萌发出苗和幼苗生长的影响。结果表明, 盐胁迫严重抑制棉花种子萌发和幼苗生长, 且对地上部的抑制程度大于对根系的抑制。盐胁迫对棉花萌发出苗和幼苗生长的抑制程度能被 $0.01 \mu\text{mol} \cdot \text{L}^{-1}$ 的冠菌素缓解。苗期盐胁迫21 d内, 冠菌素处理的棉花根、茎和叶的生物积累量较未施加冠菌素的盐处理增加1倍; 活体组织化学原位检测结果显示, 低浓度冠菌素处理降低盐胁迫诱导的主根 H_2O_2 含量。上述研究结果说明低浓度的冠菌素能提高棉花萌发出苗和苗期的耐盐性。

关键词: 冠菌素 盐胁迫 棉花 幼苗 缓解效应

Abstract: Salinity is the major environmental factor limiting cotton germination and growth during the seedling period. To evaluate the potential of the phytotoxin coronatine (COR) for alleviating salt stress on cotton germination and seedling growth, hydroponic culture experiments were carried out using transgenic insect-resistant cotton (*Gossypium hirsutum* L, cv. CCRI 45) treated with NaCl and COR. We found that cotton germination and seedling growth were limited under high level salt stress ($150 \text{ mmol} \cdot \text{L}^{-1}$ NaCl), which increased the root/shoot ratio. The reduction in cotton biomass was alleviated by the application of COR ($0.01 \mu\text{mol} \cdot \text{L}^{-1}$). An in situ histochemistry assay indicated that COR at low concentrations decreased H_2O_2 accumulation under induced salt stress. COR appears to have potential as a positive regulator for improving the salt tolerance of cotton.

Keywords: coronatine salt stress cotton seedlings ameliorating effect

Received 2011-12-31;

Fund:

国家自然科学基金(30871490); 国家高技术研究发展计划(2011AA10A206)

Corresponding Authors: duanlsh@cau.edu.cn

About author: 谢志霞 (1978-), 女, 博士 xiezhexia@126.com

引用本文:

谢志霞, 李茂营, 杜明伟, 李召虎, 田晓莉, 段留生. 冠菌素对棉花幼苗盐害的缓解效应[J] 棉花学报, 2012, V24(6): 511-517

XIE Zhi-Xia, LI Mao-Ying, DU Ming-Wei, LI Zhao-Hu, TIAN Xiao-Li, DUAN Liu-Sheng. Ameliorating Effect of the Phytotoxin Coronatine on Seedlings of Transgenic Insect-resistant Cotton Variety under Salt Stress[J] Cotton Science, 2012, V24(6): 511-517

链接本文:

http://journal.cricaas.com.cn:8082/mhxb/CN/1002-7807(2012)06-0511-07 或 http://journal.cricaas.com.cn:8082/mhxb/CN/Y2012/V24/I6/511

Service

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ Email Alert
- ▶ RSS

作者相关文章

- ▶ 谢志霞
- ▶ 李茂营
- ▶ 杜明伟
- ▶ 李召虎
- ▶ 田晓莉
- ▶ 段留生