

研究报告

OsCtBP-A基因过量表达和RNAi沉默对水稻根系生长和抗性的影响

吴茂森,李磊,吴静,陈华民,何晨阳

(中国农业科学院植物保护研究所,植物病虫害生物学国家重点实验室,北京 100193)

摘要:

为了阐明已克隆的水稻C端结合蛋白家族基因OsCtBP-A的功能,构建了该基因的过量表达和RNAi沉默载体,通过农杆菌介导转化水稻品种日本晴愈伤组织,分别获得了45个过量表达和75个RNAi沉默T0代转基因植株,并进行了PCR和GUS染色鉴定。T1代过量表达株OsCtBP-A基因表达量明显增加,苗期根系生长增加,对水稻白叶枯病抗性无明显变化;而基因沉默株OsCtBP-A基因表达量显著下降,苗期根系发育迟缓,抗旱性明显降低,抗病性减弱。表明OsCtBP-A基因的表达可能对水稻苗期根系发育、抗旱性和抗病性具有不同程度的调控作用。

关键词: OsCtBP-A;过量表达;RNAi沉默;根系发育;抗性

Effects of Overexpression and RNAi-mediated Silence of OsCtBP-A Gene on Root Growth and Stress Resistance in Rice

WU Mao-sen, LI Lei, WU Jing, CHEN Hua-min, HE Chen-yang

(State Key Laboratory for Biology of Plant Diseases and Insect Pests, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing 100193, China)

Abstract:

In order to expound the functions of cloned C-terminal binding protein gene OsCtBP-A, we established its overexpression and RNAi constructs and transformed them into calli of rice (cv. Nipponbare) via Agrobacterium-mediated transformation. Forty-five transgenic plants with overexpression and 75 with RNAi were generated and identified by PCR and GUS staining analysis. In T1 progeny of transgenic rice lines with overexpression, OsCtBP-A gene expression was remarkably increased, and root development was enhanced during seedling stage, while its resistance to rice leaf blight was no much changed. In contrast, OsCtBP-A gene expression was significantly reduced, and the root development at seedling stage was slowed down and its resistance to drought was weakened in RNAi silenced lines. The results suggested that OsCtBP-A gene might be involved in regulation of root development at seedling stage and resistances to drought and diseases.

Keywords: OsCtBP-A overexpression RNAi-mediated silence root development stress resistance

收稿日期 2009-11-29 修回日期 2009-12-14 网络版发布日期 2010-01-26

DOI: 10.3969/j.issn.1008-0864.2010.

基金项目:

国家转基因生物新品种培育重大专项(2009ZX08009-044B,2008ZX08001-002);国家重点实验室自主研究课题专项(SKL2009SR03)资助。

通讯作者: 何晨阳,研究员,博士,研究方向为分子植物病理学。Tel:010-62894147;E-mail:cyhe@caas.net.cn

作者简介: 吴茂森,副研究员,博士,从事水稻抗/感病功能基因的研究。E-mail:mawu@ippcaas.cn

作者Email:

参考文献:

本刊中的类似文章

文章评论

扩展功能

本文信息

Supporting info

PDF(554KB)

[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

OsCtBP-A;过量表达;RNAi沉默;根系发育;抗性

本文作者相关文章

PubMed

反馈人	<input type="text"/>	邮箱地址	<input type="text"/>
反馈标题	<input type="text"/>	验证码	<input type="text"/> 3584