

研究快报

不同启动子驱动下马铃薯蛋白酶抑制剂*Pin II*转基因水稻的遗传、表达和对粘虫抗性分析

武亮, 卜庆云, 周明, 杨世湖, 万建民

南京农业大学作物遗传与种质创新国家重点实验室, 江苏省植物基因工程研究中心, 南京 210095

收稿日期 2005-8-22 修回日期 2005-11-4 网络版发布日期 2006-7-11 接受日期

摘要

以不同启动子驱动的马铃薯蛋白酶抑制剂II基因(*Pin II-2x*, *Pin II-4x*)转基因水稻为材料, 经潮霉素抗性、PCR和Southern blot等检测对转基因水稻后代进行了遗传分析。结果显示: 外源基因在68.4%的转基因植株中符合孟德尔遗传模式, 单拷贝植株率为63.6%。转基因植株后代的Pin II蛋白活性测定结果表明: Act I和Ubi驱动的*Pin II-2x*转基因水稻植株中, 每克鲜叶片的Pin II蛋白含量为160μg和176μg, 而由PIN5'驱动的*Pin II-4x*为104μg, 对照水稻仅为20μg。Act I和Ubi驱动的*Pin II*表达产物对胰蛋白酶活性抑制程度分别达到37.7%和43.1%, 明显高于*Pin II*自身启动子PIN5' (29.2%)。叶片饲养粘虫幼虫的实验表明: 转基因植株叶片对粘虫有抗性, 但抗性达不到显著水平, 且启动子效率、*Pin II*表达量与抗粘虫

关键词 [马铃薯蛋白酶抑制剂II](#) [遗传](#) [活性](#) [粘虫](#)

分类号 [Q943](#)

Inheritance, Expression and Armyworm resistance of Protease Inhibitor II Gene(*Pin II*) Driven by Different Promoters in Transgenic Rice

WU Liang, BU Qing-Yun, ZHOU Ming, YANG Shi-Hu, WAN Jian-Min

National Key Laboratory of Crop Genetics and Germplasm Enhancement, Jiangsu Plant Gene Engineering Center, Nanjing Agricultural University, Nanjing 210095, China

Abstract

<I>The inheritance of rice lines transformed by protease inhibitor II gene under control of different promoters was investigated by analysis of hygromycin resistance, PCR and Southern blot. For segregation patterns of foreign gene, 68.4% of the transgenic rice plants were conformed to a Mendelian ratio and in which the rate of transgenic plants with single copy was 63.6%. Quantitative analysis of Pin II protein expressed in transgenic rice plants showed that Pin II protein in fresh leaves was 160μg/g for Act- <I> Pin <I> <I> II <I> <I> -2x <I>, 176μg/g for Ubi- <I> Pin <I> <I> II <I> <I> -2x <I>, and 104μg/g for PIN5'- <I> Pin <I> <I> II <I> <I> -4x <I> separately while in control rice plants was only 20μg/g. The inhibitory activity against trypsin of <I> Pin <I> <I> II <I> <I> <I> gene driven by <I> Act <I> I and Ubi promoter reached 37.7% and 43.1%, much higher than that driven by PIN5' (29.2%). Bioassay for insect resistance to armyworm (<I> Pseudaletia separata Walker <I>) revealed that transgenic plants had increased their resistance to the pest but there was not significantly different from controls, and also there was no correlation between insect resistance to armyworm and quantity of Pin II <I> <I> protein as well as promoters in transgenic rice.

Key words [potato protease inhibitor II](#) [inheritance](#) [activity](#) [Pseudaletia separata walker](#)

DOI:

扩展功能	
本文信息	
▶ Supporting info	
▶ PDF(0KB)	
▶ [HTML全文](0KB)	
▶ 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	
▶ 复制索引	
▶ Email Alert	
▶ 文章反馈	
▶ 浏览反馈信息	
相关信息	
▶ 本刊中 包含 “马铃薯蛋白酶抑制剂II” 的相关文章	
▶ 本文作者相关文章	
· 武亮	
· 卜庆云	
· 周明	
· 杨世湖	
· 万建民	