

生物技术 生命科学

镉处理下不同富集镉花生营养器官AhMT II mRNA表达变化

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摘要:

利用含镉(Cd<sup>2+</sup>)营养液培养花生幼苗,取不同营养器官用以检测AhMT II mRNA表达量的变化。构建了PMD18T-AhMT II和PMD18T-actin重组质粒,用SYBR Green I实时定量PCR方法精确分析了花生AhMT II mRNA表达水平。研究表明,花生幼苗期不同营养器官间AhMT II mRNA表达量差异显著(P<0.01):根>叶>茎,低富集镉花生品种XD1011根部AhMT II mRNA表达量显著低于高富集镉花生品种XA004。AhMT II mRNA表达与镉处理水平具有高度相关性,尤其是根部和叶部,在0~50 μmol/L镉处理水平间,品种XD1011和品种XA004根部相关系数分别为0.977和0.96,品种XD1011叶部相关系数为0.91,而品种XA004在0~200 μmol/L镉处理水平间相关系数为0.959。该结果可为筛选低富集镉花生品种提供理论与技术支持。

关键词: 实时定量PCR;花生;AhMT II;镉

AhMT II mRNA Expression Changes of Peanut Nutritorium (*Arachis hypogaea* L.) with Different Cadmium Absorption under Cadmium Treatment

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Abstract:

Different vegetative organs of peanut seedlings cultured with nutrient solution containing Cd<sup>2+</sup> were collected for testing the changes of metallothionein type II (AhMTII) mRNA level. PMD18T-AhMT II and PMD18T-actin plasmids were constructed, and then AhMT II mRNA level was analyzed using SYBR Green I real-time quantitative PCR. The result indicated that the AhMT II mRNA level of different tissues showed significant (P<0.01) difference: root> leaf> stem, and the AhMT II mRNA content in root of low cadmium accumulation peanut variety XD1011 was obviously lower than that in cadmium accumulation peanut variety XA004. AhMT II mRNA expression had high correlation with cadmium levels, especially in the roots and leaves. Under 0~50 μmol/L cadmium levels, the R<sup>2</sup> of XA004 and XD1011's roots were 0.977 and 0.96, respectively and the R<sup>2</sup> of XD1011's leaf is 0.91; the R<sup>2</sup> of XA004 in leaf is 0.959 under 0~200 μmol/L cadmium level. The above results would provide theoretical and technical support for screening peanut varieties with low cadmium absorption.

Keywords: real time quantitative PCR peanut AhMT II cadmium

收稿日期 2010-09-26 修回日期 2010-10-26 网络版发布日期 2011-01-04

DOI: 10.3969/j.issn.1008-0864.2011.01.

基金项目:

“十一五”国家科技支撑计划项目(2006BAD21B04);国家自然科学基金(30771361);现代农业产业技术体系建设专项资金项目资助。

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