

水稻限制性片段长度多态性(RFLP)零等位现象的分子基础研究*

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摘要 零等位基因(null allele)是指不能产生有功能的产物的等位基因。由限制性片段长度多态性(RFLP)揭示的零等位表现为在实验所用的严谨条件下一个探针与一个植物品种的DNA能够稳定地杂交,而与另一个植物品种的DNA杂交的信号很弱或者没有信号,这说明在后者的基因组中与该探针相应的区域发生了缺失、插入或染色体重排等较大范围的变异。本文利用水稻基因组随机探针RG684对52个水稻品种进行了RFLP分析,结果零等位主要出现在地理上分布于我国东北及日本一带较为典型的粳稻品种中。零等位的这种分布与有些研究者假定的水稻进化从野生稻→籼稻→粳稻的趋势相吻合。RG684的核苷酸序列分析表明其为基因组中没有编码功能的部分,这种序列的缺失或变异不会对植物的生存产生明显的影响,与果蝇gypsy转座子bx34e序列的比较发现RG684序列11403—1439处的37个碱基与其长末端重复顺序(LTR)有78.4%的同源性,作者推测水稻中RFLP零等位的产生可能与转座可类似转座的事件有关。

关键词 [水稻,限制性片段长度多态性,RFLP,零等位](#)

分类号

Molecular Study on Null Allelic RFLPs Among Rice Varieties*

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Abstract

Laboratory of Plant Biotechnology, Institute of Genetics, Academia Sinica Beijing 100101 Null allele is an allele that produces no functional products. In RFLP analysis, null allele means that one probe can hybridize to plant DNA from one variety readily, but very faintly to DNA from another variety or even has no hybridization signal under experimental stringency and this may be an indication of deletion, insertion or major sequence rearrangement(s) in the corresponding regions. We report here about null alleles of RFLP among 52 rice varieties uncovered with rice random genomic probe RG684. The results show that this kind of null allele is most likely to occur in typical japonica varieties distributed geographically in Northeast China and Japan, and this tendency is consistent with the hypothesis that rice evolved with a trend of from wild type→Indica→Japonica. Sequence analysis indicates that the sequence of RG684 has no encoding function. Therefore, changes in this region may not influence the survival of the plant. Comparison of the sequence of RG684 and gypsy transposon bx34e long terminal repeats (LTR) of *D. melanogaster* shows homology of 78.4% of 37 base pair and this leads to the consideration that the occurrence of null alleles in rice is related to transposition like events.

Key words [Rice](#) [RFLP](#) [Null allele](#)

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