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研究报告

甘蓝型油菜Ogura 雄性不育×白菜的回交杂种后代与亲本之间蕾期基因表达差异比较研究* Differences of Gene Expression in Bud Stage of Backcross Hybrid Between Ogura-type Male-Sterile Brassica napus L and B campestris L versus Parents

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摘要

以甘蓝型油菜（Brassica napus L， AACC，2n＝38）Ogura细胞质雄性不育材料为母本，以不同白菜（B campestris ssp. chinensis Makino, AA, 2n＝20） 自交系‘新选一号’和‘矮脚黄’为父本进行杂交，获得了杂种F1、BC1、BC2代。利用cDNA-AFLP技术对两种材料的不同回交世代BC1、BC2代与其亲本在蕾期的基因表达进行分析。结果表明，两种白菜回交世代与其亲本的基因表达有明显差异，在质和量上都存在差异。基因表达模式有5类共7种：（1）单亲沉默型（2种），（2）单亲一致型（2种），（3）双亲共沉默型，（4）杂种特异型，（5）表达一致型。随着回交世代的增加，回交杂种和亲本的基因表达在单亲沉默型、双亲共沉默型呈增加趋势。而在母本一致型、父本一致型、杂交种特异型、表达一致型呈下降的趋势。两种白菜在F1、BC1、BC2 3个世代与回交亲本花蕾间的基因差异表达有15种类型，其中以在轮回亲本、F1、BC1、BC2中共同出现表达的带的比例最高。

Abstract: Crosses between female parent of Ogura male sterility Brassica napus L. and male parents of B. campestris ssp. chinensis Makino were made and F1, BC1 and BC2 generations produced. Gene expression of two Chinese cabbage backcross hybrid BC1, BC2 and their parents at bud stage was analyzed by means of cDNA-AFLP technique. The results indicated that the patterns of gene expression differ significantly between BC1 and BC2 generations and their parents. There were many patterns of gene expression, including gene overexpression and gene silencing. Five patterns (seven kinds) of gene expression were observed, which include: (1) bands occurring in only one parent (two kinds); (2) bands observed in hybrids and one parent (two kinds); (3) bands occurring in only parents (one kind); (4) bands visualized in only hybrids (one kind); (5) bands observed in parents and hybrids (one kind). In accompany with the addition of backcross, the increase trend in backcross hybrids and their parents were described in the aspects of differential gene expression, bands expressed only in one parent and bands expressed only in both parents. The declined trend in backcross hybrids and their parents were observed in the aspects of bands expressed in both hybrids and one parent (two kinds), bands visualized in only hybrids and bands observed in parents and hybrid. Fifteen patterns of gene expression were observed in F1、BC1、BC2 and backcross parents. The percent of bands expressed in F1、BC1、BC2 and backcross was highest.

关键词 Ogura雄性不育 白菜 蕾期 基因表达 cDNA-AFLP 远缘杂交 回交 Key words Ogura male sterility Chinese cabbage bud stage gene expressed cDNA-AFLP wide cross backcross

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