

식물생육억제제 처리에 따른 애기장대의 유전자 발현 양상 변화

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Differences in Gene Expression Between Normal Plant and Growth Inhibited Plant by Plant Growth Retardant

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Objectives

We present here a general method (representational difference analysis) for finding small differences between the sequences of two DNA populations. We analyzed difference of *Arabiopsis thaliana* treated with HCA and normal plant by representational difference analysis (RDA) of cDNA.

Materials and Methods

- Plant : *Arabiopsis thaliana* (ecotype, colombia)

Total mRNA was extracted from the normal and *Arabiopsis* treated with HCA. To specify candidate genes for growth inhibition phenomenon, the cDNA fragments were obtained through RDA and analyzed from each of normal *Arabiopsis* (tester) / HCA treated *Arabiopsis* (driver) and HCA treated *Arabiopsis* (tester) / normal *Arabiopsis* (driver), respectively.

Results and Discussion

The *Arabiopsis* treated with HCA was about 2 times smaller than the normal *Arabiopsis* at 14 days old seedling. Homology analysis of cDNAs isolated from cDNA-RDA were performed. Using the *Arabiopsis* seedlings treated with HCA to tester, peroxidase gene was induced. On the other hand, using the *Arabiopsis* seedlings untreated with HCA to tester, lipid transfer protein (DIR1) gene was induced.

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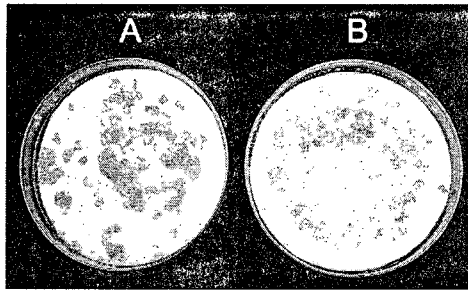


Fig. 1. Growth of *Arabidopsis thaliana*. A, normal; B, HCA treated.

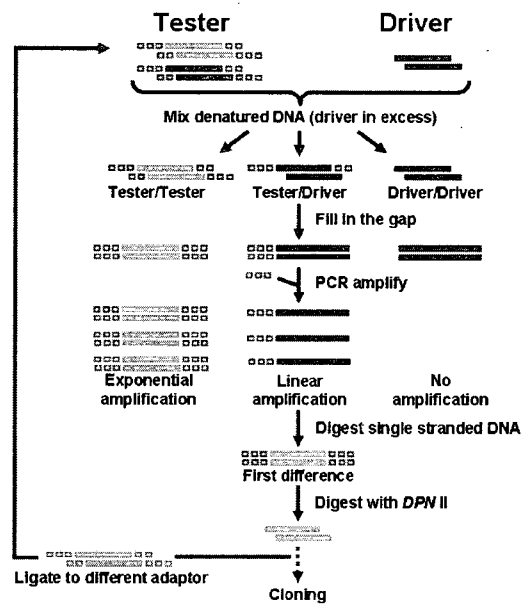


Fig. 2. Schematic demonstration of cDNA-RDA. Driver / Tester ratios was increased by 100 : 1 in 1st, 800 : 1 in 2nd, and 400,000 : 1 in 3rd round hybridization with different adaptor.

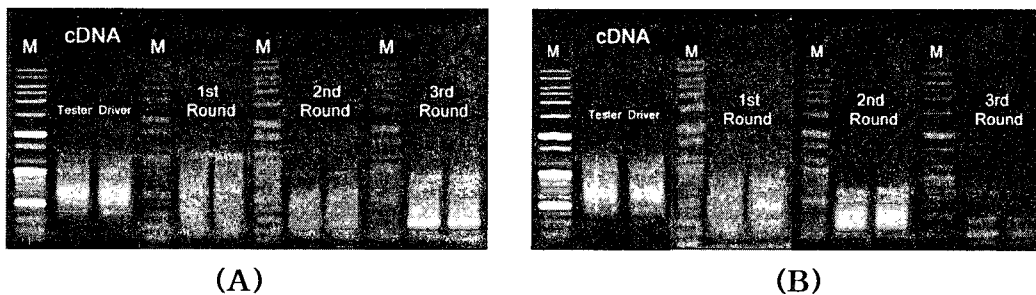


Fig. 3. Amplicons obtained with cDNA probes isolated from (A) tester, *Arabioposis* treated with HCA; driver, normal *Arabioposis* and (B) tester, normal *Arabioposis*; driver, *Arabioposis* treated with HCA.