P-84

Kenaf의 재분화 및 GutD gene을 이용한 형질전환

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Agrobacterium-mediated transformation using GutD gene and Plant regeneration of Kenaf(*Hibiscus cannabinus*)

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Objectives

Plants are always exposed to diverse biotic and abiotic environmental stresses and they usually respond to diverse unfavorable environments through regulating different signaling pathways. Salinity stress is one of the most serious factors limiting the distribution and productivity of crops and forest trees.

Expression of compatible solutes and heterologous sodium efflux transporters may be a useful approach to improve the salt tolerance of forest trees. Indeed, the increase of salt tolerance or water stress tolerance of photosynthetic organisims transformed with genes for synthesis of compatible solutes had been demonstrared. A benificial effect on abiotic stress tolerance agaunst damage by drought and high salinity has been documented when transgenic plants have been engineered to accumulate mannitol, glycine betaine, proline, sorbitol, trehalose, and fructans.

Since high salt condition seriously impairs growth and development of crops, development of salinity tolerant cultivars has been a major objective of most breeding programs.

Demonstrated successful shoot regeneration system by leaf explants, and produce the transgenic kenaf plant that have increased their salt tolerance with the gutD genes. this investigation could be useful for the future studies on genetic engineering breeding of kenaf.

Material and Method

o Material :

- Mature seeds of kenaf cultivars Dowling, Everglade-41
- *agrobacterium tumefaciens* strain LBA4404 containing the binary plasmid pBI121 which carrying the glucitol-6-phosphate dehydrogenase(GutD) gene

o Method :

Culture conditions

Explants were transferred to fresh MS media supplemented with different

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concentration of TDZ, 2,4-D, NAA and 3% sucrose.
Shoot enlongation and rooting
shoot regeneration media supplemented with different concentration of IAA, BA, Kinetin and TDZ. all cultures were transferred to fresh medium every 2-3 weeks.

Results and Discussion

1. The rate of adventitious buds induction was highest in MS medium with TDZ 0.5-1mg/L, when cultured for 3weeks under light conditions. the optimum conditions for shoot regeneration observed combination of IAA, BA and TDZ growth regulators.
2. The five transformation plants examined, five plants were confirmed to have the integrated 35S promoter and the selection rate was 100%.
3. These results indicate the presence of the gutD gene in the transgenic plants