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Studies on Improvement of Transformation Efficiency In Lettuce (*Lactuca sativa* L.)

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Objectives

This experiment was carried out to develop the regeneration system and to increase the transformation efficiency in lettuce (*Lactuca sativa* L.). Several kind of antioxidants were added in the media of cocuture and selection.

Materials and Methods

1. Materials
   Lettuce : Lactuca sativa L. cv. Cheongchima, cv. Chukmyon
   Agrobacterium tumefaciens EHA105
2. Assay
   GUS histochemical assay(pIG121, pCKBar)

Results and discussion

In the effect of plant growth regulator, the optimum NAA and kinetin concentration for the induction of shoots was 0.2 mg/L, 0.5 mg/L for two variety of lettuce(Cheongchima and Chukmyon). In medium containing NAA 0.2 mg/L, kinetin 0.5 mg/L in Cheongchima showed high shoot formation rate as 76.6% and Chukmyon showed high shoot formation rate as 70%. The concentration of kanamycin and phosphinothricin in selection of transformation was 50mg/L, 0.3mg/L respectively. *Agrobacterium* inoculation of explants increased ethylene production, while application of antioxidant during inoculation reduce it. In the effect of antioxidant by selection of transformation, the optimum cystein and ascorbic acid concentration for the induction of shoot were cystein 10mg/L and ascorbic acid 10mg/L. In medium containing cystein 10mg/L in Cheongchima showed the shoot formation rate as 90% and Chukmyon showed as 86.6%. Also in medium containing ascorbic acid 10mg/L in Cheongchima showed high shoot formation rate as 86.6% and Chukmyon showed as 80%. Selected shoots were regenerated and confirmed by PCR and GUS assay.