

***Agrobacterium*-mediated transformation of lettuce (*Lactuca Sativa* L.)**

Joo Mi Jeon¹, Nam Young Ahn¹, Bo Hwa Son¹, Katarzyna Glowacka¹,
Young Hoon Lee³, Young Ju Choi², Sang Wan Gal³, Sung-Ho Lee¹

¹Division of Applied Life Science (BK21) and Environmental Biotechnology
National Core Research Center, Gyeongsang National University,
Jinju 660-701, Korea

²Department of Food and Nutrition, Silla University, Busan 617-736, Korea

³Department of microbiological engineering, Jinju National University,
Jinju 660-758, Korea

TEL: +82-55-751-5949, FAX: +82-55-754-0086

For screening of highly regenerable lines of lettuce, we used five hybrid lines of lettuce for plant regeneration from cotyledon and primary leaf explants. After surface sterilization of seeds, seeds were germinated on MSO medium under an 16 h photoperiod at 26±1°C. Both cotyledon explants from 7-days-old (depending on the lines) seedlings and primary leaf explants from 10-12 days-old (depending on the lines) seedlings were cultured on MS medium containing 2mg/l kinetin, 0.1mg/l NAA¹, vitamins, 3% sucrose and 0.25% phytigel for shoot induction respectively. The frequency of plant regeneration were recorded after 30 days of culture on shoot induction medium. After screening of the highly regenerable line, we established the optimum transformation condition using transient expression of *gus* gene by *Agrobacterium*-mediated transformation. Strains of *A. tumefaciens*, LBA4404 (pCAMBIA1301) carrying p35s-hpt-35s and pNOS-nptII-NOS were used for this study. Based on the histochemical staining of GUS activity, transient expression was found to be dependent on acetosyringone concentration, *Agrobacterium* infection and co-cultivation time. Maximum GUS activity was obtained when acetosyringone concentration, *Agrobacterium* infection and co-cultivation time were applied to 150µM, 15min and 3day, respectively.

References

1. Webb, D.T. and L.D. Torres. 1984. Interaction of growth regulators, explant age, and culture environment controlling organogenesis from lettuce cotyledon in vitro. *Can. J. Bot* 62:586-590.