

P012

## **Efficient *Agrobacterium*-mediated Transformation using Mature Embryos of Korean Oats**

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### **Objectives**

The objectives of this study were to investigate an efficient method of *Agrobacterium*-mediated transformation from mature embryos and to determine effect of *Agrobacterium* strains and treatments on transformation using mature embryos of Korean oat cultivars.

### **Materials and Methods**

#### **Materials**

- Plant : Two different of oat, Malgwiri and Samhangwiri, were used.
- *Agrobacterium* strain / plasmids : KYRT1, EHA105 / pCAMBIA 1350.1

#### **Methods**

- Treatments : sonication, vacuum infiltration, and the combination of sonication and vacuum infiltration.
- *Agrobacterium* density : OD<sub>600</sub> = 0.8~1.2
- Transformation : After the inoculation, the plates were immediately sealed with Parafilm and the Co-cultured in the dark at 25°C for 4~5 days.
- Analysis : Histochemical analysis of GUS

### **Results and Discussion**

To develop a target tissue for transformation, we used mature embryos of Korean cultivars. Efficiency of *Agrobacterium*-mediated transformation was indicated by GUS activity (Jefferson, 1987) in mature embryos of oat. Transient GUS expression was confirmed on 4~5 days after co-cultivation. In comparison of *Agrobacterium* strains, KYRT1 showed high frequency in Malgwiri and Samhangwiri. Especially, KYRT1 was cultured on LB medium increased GUS expression in Samhangwiri (Fig. 1). While, percentage of GUS expression showed high in Malgwiri.

The combination of sonication and vacuum infiltration showed high GUS expression efficiency compared with other treatments. Particularly, treatment with 30 or 60 seconds of sonication and 30 minutes of vacuum infiltration, and 60 seconds of sonication and 60 minutes of vacuum infiltration in Samhangwiri and Malgwiri showed high frequency for GUS activity. Therefore, based on this treatment, a simple and improved transformation protocol has been developed for Korean cultivars.

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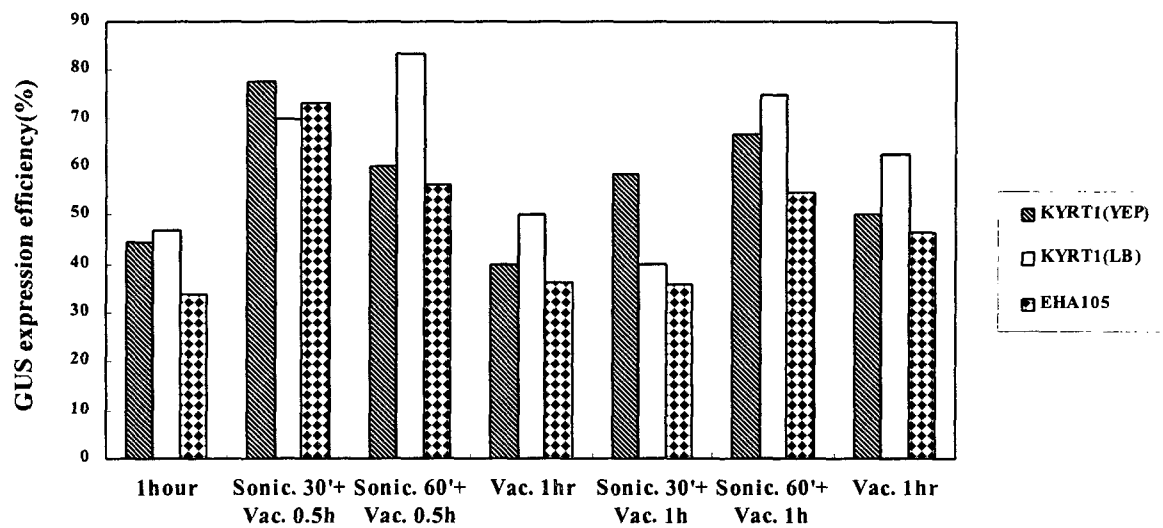


Figure 1. The effect of treatments on GUS expression in mature embryos of Samhangwiri.

<sup>s</sup>Efficiency(%) = Number of GUS expression mature embryos / Number of mature embryos × 100.

\* Sonic. : Sonication, Vac. : Vacuum infiltration