

Kusuma Rodpeawpan 2011: Transformation of Glyphosate Resistance Gene into Sugarcane (*Saccharum officinarum* L.). Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Associate Professor Sontichai Chanprame, Ph.D. 68 pages.

The study of factors affecting *Agrobacterium*-mediated transformation efficiency were done including the concentration of cefotaxime on growth of *Agrobacterium tumefaciens* and sugarcane callus. It was found that cefotaxime at the concentration of 200 milligram per liter could inhibit growth of *A. tumefaciens* strain EHA 105. Cefotaxime at the concentrations of 100-500 milligram per liter did not affect on growth of the callus and regeneration into plantlet. Another tested factor was the dilution of bacterial suspension combine with various inoculation duration. Transformation efficiency was determined by measuring transient expression of *uidA* (*gus*) gene in transformed callus using GUS histochemical assay. It was found that the bacterial suspension in the dilution ratio of 1:0 (bacterial suspension: liquid medium) in concerted with 10 minutes inoculation period gave the highest percentage of blue staining pieces, 88.33 % and significantly different from other treatments.

Transformation of *EPSPs* gene into calli of sugarcane using *Agrobacterium* strain EHA105 harboring pCAM-EPSPs 1304 plasmid by the technique studied earlier was done. 10 clones of callus survived on the selective medium containing 0.5 mM glyphosate but only 5 of them showed PCR positive for *EPSPs*. The results of Southern PCR hybridization and dot blot hybridization also confirmed the presence of *EPSPs* gene into plant genome.

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Thesis Advisor's signature