

Tiwapan Boonma 2012: Transformation for RNA Interference of the Curcuminoid Biosynthetic Genes in Turmeric (*Curcuma longa* L.). Master of Science (Genetics), Major Field: Genetics, Department of Genetics. Thesis Advisor: Associate Professor Surin Peyachoknagul, Dr.Agr. 72 pages.

Turmeric (*Curcuma longa* L.) is a beneficial herb used in food additives and traditional medicines because of the antioxidant activity of curcuminoid substances in the rhizome. Curcuminoids are synthesized by two type III polyketide synthase genes, namely *diketide Co-A synthase* (*DCS*) and *curcumin synthase* (*CURS*) genes. In this study *DCS* and *CURS1* genes were transformed into turmeric to induce RNA interference. *In vitro* propagation of shoot on MS medium supplemented with 2 mg/l BA induced shoots and roots after 6 weeks. DNA fragments of 196 bp of *DCS* and 229 bp of *CURS1* were amplified from genomic DNA of turmeric and constructed into RNAi expression vector using Gateway[®] recombination system. *Agrobacterium tumefaciens* EHA105 was used to transform turmeric shoot. 3 (0.6%) and 4 (0.8%) putative *DCS* and *CURS1* transformed plants were obtained. One of the *DCS* and all of the *CURS1* transformed plants showed the presence of *hpt* marker gene by PCR. The expression of the target genes were also reduced in one *DCS* transformed plant with positive *hpt* gene and two *CURS1* transformed plants. The result indicated that the region of *DCS* and *CURS1* genes in this construct were successfully used for downregulation of these genes expression.

Student's signature

Thesis Advisor's signature