

Charlermpon Sriadunphan 2012: Plant Propagation in *Jatropha curcas* L. by Tissue Culture and Alteration of *APETALA2* Expression in *Arabidopsis thaliana* and *Jatropha curcas* L.

Master of Science (Genetics), Major Field: Genetics, Department of Genetics.

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*Jatropha curcas* L. is a plant in family EUPHORBIACEAE whose oil can be squeezed out and used directly in low power water pump. The yield of this plant per unit area is low. First experiment was to find suitable tissue culture media recipe for *J. curcas* cv KUBP 78-9. Callus formation from young leaf, leaf petiole and young shoot within 1-2 weeks was achieved on MS medium supplemented with 0.5 mg/l BAP, 1.0 mg/l 2,4-D and 1.0 mg/l IAA. These calli were green and tightly packed. Multiple shoot proliferation was successfully carried out on MS supplemented with 0.5 mg/l BAP and 1 mg/l IBA while root initiation was successfully induced on ½MS supplemented with 10 mg/l IBA. Another experiment was to decrease *APETALA 2* expression. *APETALA 2* gene was reported to have important roles in controlling seed size, seed weight, embryo cell numbers and size of the cell. To lower the expression of this gene in *J. curcas* three pairs of primers were designed to amplify three regions of the *AP2* gene and used to successfully construct two RNAi silencing vectors by linking into pHellsgate8. These constructs were transferred into *Agrobacterium tumefaciens*. Floral dip method was performed to transfer these constructs into *Arabidopsis* to do homologous gene silencing. Seeds were obtained and selected on Kanamycin containing media. Then the survived plants were checked with Polymerase Chain Reaction using primers specific for the construct and transformants were identified. Expression analysis was done using semi-quantitative RT-PCR with primers specific *AP2* gene. *Actin* gene expression was used as a loading control. T<sub>1</sub> *Arabidopsis* plant containing pJC2/14 and pF2/4/2 constructs showed reduced *AP2* expression while plant containing pF1/3/1 showed normal expression. Transformation into *J. curcas* tissues was performed but not successful.

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Thesis Advisor's signature