Saijai Choorattana 2008: Mutation Induction of *Plumbago indica* L. and *P. zeylanica* L. by Tissue Culture and Mutagen. Master of Science (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Sontichai Chanprame, Ph.D. 95 pages.

The suitable medium for suspension culture of *Plumbago indica* L. and *P. zeylanica* L. was studied. It was found that cell suspension proliferated well in MS-B5 supplemented with 0.5 mg/l BA and 1 mg/l NAA. While MS-B5 supplemented with 4 mg/l BA and 0.1 mg/l NAA could be used for plant regeneration from callus and cell suspension of *P. indica* L. It was not able to regenerate the plantlets from callus and cell suspension of *P. zeylanica* L. When 0-2% EMS were applied to callus and cell suspension for 60 and 90 min, it was found that the growth rate of them was decreased when the concentrations and the application time of EMS were increased. Many plantlets were regenerated from treated callus and cell suspension of *P. indica* L. and some of them were abnormal. There was no plantlets regenerated from treated callus and suspension of *P. zeylanica* L.

The variation of plumbagin content from root of *P. indica* L. using HPLC was studied. It was found that untreated callus or cell suspension derived plants had plumbagin content higher than that of the control were 25 and 13 plants and plumbagin content lower than that of the control were 5 and 17 plants, respectively. The treated callus or cell suspension derived plants had plumbagin content higher than that of the control were 49 and 59 plants and plumbagin content lower than that of the control were 11 and 1 plants, respectively. Genetic variation determination using AFLP technique with 8 pairs of primer indicated that *P. indica* L. plants derived from tissue culture and mutagen treatment were induced genetic variation.

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