Angkana Jongcherdchutrakul 2012: Inheritance of Phorbol Esters Content in Jatropha Seeds (*Jatropha curcas* L.). Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Assistant Professor Patcharin Tanya, Ph.D. 68 pages.

Phorbol esters (PEs) are toxic compound in jatropha seeds that cannot be destroyed by heat treatment. An effective approach to reduce PEs is through plant breeding. To perform selection effectively on PEs content, the plant breeder should know about the inheritance of it as a background information in jatropha breeding. In this study, the first experiment was conducted to compare the protocols used for extraction of PEs from jatropha seed for jatropha breeding program. Two extraction solvents i.e. methanol of HPLC and analytical grades were compared using seed sample weights of 4, 5 and 6 grams. The jatropha varieties were used, viz. Chainat, Korat, India, KUBP, Myanmar 1, Myanmar 2, Vietnam, Mexico 6, Mexico 85 and Mexico 87. Their seeds were divided into kernel, seed coat and whole seed for extraction. The result showed that the optimal method was using analytical grade methanol as the extraction solvent for 4 grams of sample weight.

The second experiment was set up to study on xenia effect of PEs content in jatropha seeds. F_1 seeds from 6 crosses between high PEs varieties (Chainat, Korat and Phrae) and low PEs varieties (Mexico) were analyzed using extraction method from the first experiment. The results showed no xenia effect in the F_1 seeds from all crosses. Thus seed set on low PE plants are always low in PEs regardless of pollen source.

The third experiment was planned to study on inheritance of PEs content in jatropha seeds. The F_2 seeds from direct and reciprocal crosses of Chinat and Mexico varieties were used. The results showed that, PEs contents in F_2 seeds were continuously distributed. It can be considered as a quantitative trait which is influenced by multiple genes and environment.

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