

Ratchadaporn Thaikert 2009: Genetic Diversity and Some Active Compounds of Turmeric (*Curcuma longa* L.). Master of Science (Agriculture), Major Field: Horticulture, Department of Horticulture. Thesis Advisor: Associate Professor Yingyong Paisooksantivatana, Ph.D. 73 pages.

The genetic diversity among 63 samples of *C. longa* L. and 1 sample of *C. mangga* collected from Thailand and Laos, P.D.R. was studied using 19 RAPD primers. A total of 184 bands or markers were generated. Polymorphic markers were 89.83%. Polymorphic Information Contents (PICs) range from 0.000-0.500 with an average PIC score of 0.297. Genetic similarity estimated by Dice (1945) ranged from 0.660-0.957. Cluster analysis using computer program NTSYSpc- 2.20k based on all RAPD data was determined and could classified all 64 samples into 5 distinct groups at 0.736 of genetic similarity. Principal Component Analysis (PCA) was calculated based on 184 RAPD markers to produce distribution pattern of all 64 samples. PCA 1, PCA 2 and PCA 3 accounted for 55.466 % of total variation. The scatter plot result was not consistent to the phylogenetic tree. The content of curcuminoids and antioxidant activity of 68 samples were analyzed before and after planting. The highest content of curcuminoids was found in the samples from the Central, while the lowest content was found in the samples from Laos, P.D.R. The antioxidant activities of the extracts were assayed with DPPH (1,1-diphenyl-2-picrylhydrazyl) compare to ascorbic acid. In contrast, the highest antioxidant activity ($EC_{50} = 8.04 \pm 3.77$ mg/ml.) was found in the samples from the Central and antioxidant activity decreased after planting for 6 months. Moreover, antioxidant activity is positively correlated with the curcuminoids content.

Student's signature

Thesis Advisor's signature

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