Thesis Title: Identification of Galanga by AFLP Technique

Author: Ms. Kridsana Wongpunya

Degree: Master of Science (Agriculture) Horticulture

Thesis Advisory Committee: Assist. Prof. Dr. Pitaya Sruamsiri 
Chairperson

Lecturer Dr. Weenun Bundithya 
Member

ABSTRACT

The genetic characteristic of Galanga related to 1’acetoxychavicol acetate synthesis and accumulation was studied by Amplified Fragment Length Polymorphism (AFLP) technique. For the study, twenty samples of Galanga (Alpinia galanga (L.) Willd.) rhizome were collected from major growing area in many provinces of Thailand, and then cultivated for one year under the same environmental and management conditions. Firstly, the quantitative analysis of 1’acetoxychavicol acetate was performed by crude extraction followed by column chromatography method. The result showed two distinct fractions containing 1’acetoxychavicol acetate named L14 and L15. Comparing among Galanga plant samples, the maximum quantity of L14 and L15 were found in Kha Dang from Kampongphet at 69.68% of crude extract. The next were Kha Luang from Uttradit and Kha Dang from Lopburi which revealed the L14 and L15 quantity of 67.34% and 66.76% of crude extract, respectively. The minimum quantity of L14 and L15 were found in Kha Yuak from Nakorn sawan and Kha Saku from Uttradit at the range of 41.9% - 52.21% of crude extract. The genetic relationship of Galanga was studied by AFLP marker using EcoRI and Msel as restriction enzyme to cut genomic DNA. Fifteen primer combinations, yielding the high number of sharp and clear DNA fragment, were selected from the total 128 testing primer combination. None of the DNA fragment relating to Galanga sample group was found. Moreover, the dendogram of these 15 primer combinations showed unclear relationship with 1’acetoxychavicol acetate accumulation. However, the Galanga samples could
be categorized according to morphological characteristic such as red rhizome accumulation, white rhizome accumulation and wild landraces. For genetic diversity of 20 Galanga plant samples, the maximum genetic distance was found at 0.68 which exhibited the very high genetic diversity among the plant samples. The result in this study could show the specific band of Kha Yuak, Kha Dang and Kha Ling, which will be useful for base-sequence analysis and can be used as DNA marker for variety specification in further study.