

Jakkapun Wanichkul 2006: The Evaluation of Genetic Diversity of *Paphiopedilum exul* Using AFLP Markers and Preliminary Study on Genetic Relationship of Some *Paphiopedilum* spp. in Thailand by ITS Sequence Analysis. Master of Science (Genetic Engineering), Major Field: Genetic Engineering, Interdisciplinary Graduate Program. Thesis Advisor: Mrs.Suchitra changtrachoon, D.F. 102 pages. ISBN 974-16-2256-2

Amplified fragment length polymorphism (AFLP) markers were used to evaluate genetic diversity in six populations of *Paphiopedilum exul*. The result showed that, average percentage of polymorphic loci and expected heterozygosity were 80.0% and 0.301 respectively. Population from the Plaiypraya Krabi province had the highest percentage of polymorphic loci 91.27% and population from the Kaonoi Aowleuk Krabi province had the highest expected heterozygosity 0.334. Whereas the lowest genetic variation was found in population from the Koanak Krabi province with 62.70% polymorphic loci and expected heterozygosity of 0.263. The study also revealed genetic relationship of the six populations. These preliminary results can help planning a conservation program of *Paphiopedilum exul* in the future.

Internal Transcribed Spacer (ITS) sequence analysis was used to study genetic relationship of some *Paphiopedilum* spp. distributing in Thailand. Neighbor-joining tree revealed two clusters of which one corresponded to morphological characteristic of subgenera, *Paphiopedilum* and *Brachypetalum*. However, *Paphiopedilum* x Ang Thong, a member of the subgenus *Brachypetalum* showed close genetic relationship with subgenus *Paphiopedilum*. To better understand the position of *Paph.* x Ang Thong, only species from the subgenus *Brachypetalum* were used for reconstructing the tree. The result showed that *Paph.* x Ang Thong was the closest relative of *Paph. niveum* and *Paph. godefroyae* respectively. Furthermore, an unknown specie called "TungKarn", was placed close to *Paph. villosum*, *Paph. gratixianum* and *Paph. charlesworthii* respectively, all belonging to the subgenus *Paphiopedilum*. Moreover, three different Thai common names such as "Leung Prachin", "Leung Karn" and "Leung Udom" resulted in confirming on the same specie of *Paph.concolor*.

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