Sirikan Kobkeattawin 2011: Molecular Cloning and Expression of *Lectin* Genes from Bulbophyllum Orchids. Master of Science (Genetic Engineering), Major Field: Genetic Engineering, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Pattana Srifah Huehne, Ph.D. 79 pages.

High concentration of polysaccharide in orchid was the main problem of nucleic acid extraction from orchid. In this study, a simple and efficiency protocol for high quality RNA extraction from orchid by adding sodium periodate ($NaIO_4$) to eliminate polysaccharides was developed. Therefore, the full-length of *lectin* gene cloning from *Bulbophyllum morphologorum* Kraenzl. orchid was achieved. The obtained *lectin* gene isolated from *B. morphologorum* Kraenzl. was 806 base pair (bp) in length which encoded for 176 residues polypeptide of one open reading frame (ORF). In addition, the partial *lectin* genes of *B. orientale* Seidenf. and *B. blepharisters* Rchb.f. orchids were 245 bp at 5′-end and 363 bp at 3′-end were also cloned, respectively. However, the derived amino acids from *B. morphologorum* Kraenzl., *B. orientale* Seidenf. and *B. blepharisters* Rchb.f orchids showed 62%, 73% and 74% identity with *Cymbidium* hybrid, respectively. Furthermore, analysis of tertiary protein structure prediction demonstrated *B. morphologorum* lectin consisted of three β-sheets domains containing mannose-binding site. The expression of *lectin* gene was the most abundant in leaf when compared with psuedobulb and root of *B. morphologorum* Kraenzl. orchid determined by Real-Time Quantitative PCR.

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