

Thitiyaporn Prayoonmahisorn 2007: Molecular Phylogenetic and Gene Transfer in Paddy Straw Mushroom. Master of Science (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program. Thesis Advisor: Ms. Malee Srisodsuk, Ph.D. 92 pages.

*Volvariella volvacea* is an important edible mushroom of the tropics. It is a homothallic species with high genetic variation. Molecular phylogenetic studies of this mushroom will provide basic genetic information for its strain improvement. In this study, molecular phylogenetic of the 34 paddy straw mushroom isolates were differentiated by using 28S rDNA-PCR-RFLP, ITS-PCR-RFLP and DNA fingerprinting. It was found that ITS-PCR-RFLP patterns produced using restriction endonuclease *SacI* and *XbaI* and Sau-PCR DNA fingerprinting enabled identification of the mushroom species and strains. Phylogenetic analysis of the ITS nucleotide sequences by using PHYLIP classified the 34 paddy straw mushroom isolates into 2 groups. A preliminary studies of gene transfer in paddy straw mushroom revealed that antibiotic resistant gene can be transferred to the mushroom via particle bombardment and by using *Agrobacterium*.

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