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Analysis of Mating System in Lentinula edodes and Development of Mating Type-Specific Markers

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Mating of tetrapolar mushrooms is regulated by to chromosomal loci, A and B. A locus contains A gene that expresses a homeodomain protein whereas B locus contains multiple pheromones and receptor genes. In order to characterize the mating loci in Korean cultivated strains of *Lentinula edodes*, one hundred monokaryotic myclelia were isolated from the basidiospores of cultivated strains, including Cham-A-Ram, Sanjo701, and Sanjo707. Both mating loci were amplified using primer sets targeting conserved sequence regions for homeodomain (HD), pheromone, and receptor genes. Subsequent sequence analysis revealed that the Korean strains contained significant variations in the homeodomain of A locus, even within the same A1 or A2 mating type. Similarly, B locus was also highly diversified in the sequences of pheromones and receptors as well as gene organization. These results enabled us to design mating type-specific probes which can distinguish mating type of each strain. The specificity was confirmed by between intra- and inter-strain mating experiment.

Keywords: Lentinula edodes, Mating gene, Tetrapolar