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Diversity of Fungi from Dokdo Island Soil, Korea and Their Antimicrobial and Hydrolytic Enzyme Activity

Hye Won Lee and Hyang Burm Lee*

Division of Applied Bioscience & Biotechnology, College of Agriculture & Life Sciences, Chonnam National University, Gwangju 500-757, Korea

Dokdo island is located in the northeastern part of Ulleungdo, known as volcanic island. In total, 53 fungal isolates were isolated from Dokdo island soil sample, using dilution plate technique. The isolates were identified on the basis of morphological characteristics and rDNA ITS sequence analysis. Out of them, 41 isolates were identified at the level of species. The dominant fungal species and genera included *Fusarium* spp., *Mucor* sp., *Clonostachys* spp., and *Trichoderma* sp. The % sequence identity (the number of matches/the complete alignment length) values via NCBI BLAST searching of EML-IF9, EML-MF30-1 and EML-DDSF4 represented 97.19% (485/499) with *Clonostachys* cf. *rosea* (GenBank accession no. KC313107), 98.33% (472/480) with *Metarhizium guizhouense* (GenBank accession no. HM055445), and 100% (350/350) with *Mortierella oligospora* (GenBank accession no. JX976032), respectively. Three species of *C. rosea, M. guizhouense* and *M. oligospora* represented new records of fungi from Dokdo island, Korea. The antimicrobial activities of the fungal strains varied with tested. Two isolates (EML-MFS30-1 and EML-IF9) showed antifungal activity against several fungi including *Fusarium oxysporum* and *Rhizotonia solani. Clonostachys rosea* (EML-IF9) showed strong hydrolytic enzyme activity. Our results showed that the antagonistic fungi including *Clonostachys rosea* will be used as potential biocontrol agents for control of fungal diseases.

Keywords: fungal diversity, new record, Dokdo island, antimicrobial and hydrolytic enzyme activity