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Comparison of RAPD, AFLP and EF-1α Sequences for the Phylogenetic Analysis of Fusarium oxysporum Formae Speciales in Korea

Jae-Min Park*, Man Kyu Huh[1] and Jae-Dong Lee

Department of Micrology, Pusan National University, Busan 609-735, Korea
[1]Department of Molecular Biology, Dong-eui University, Busan 614-714, Korea

Identification of Fusarium oxysporum formae speciales has been difficult due to confusing phenotypic classification systems. We evaluated genetic relationship of forty-one formae speciales of Fusarium oxysporum with random amplified polymorphic DNA (RAPD), amplified fragment length polymorphism (AFLP), and translation elongation factor 1 alpha gene (EF-1 α). In addition, the correlation between mycotoxin content of fusaric acid and isolates based on molecular maker data was evaluated using the modified Mantel's test. Using these methods, we were able to overcome certain limitations associated with classical taxonomic methods. Genetic relationships between strains were also estimated using the three methods. In general, very poor correlations were found, reflecting the different genomic regions for which the methods are screened. The AFLP analysis showed a higher discriminatory power than that of a the RAPD and EF-1α analyses, all three techniques were able to detect genetic variability among F. oxysporum formae speciales in this study.