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Resistance Response of F1 Progenies obtained from Parents with Contrasting Phenotypes Against *Fusarium oxysporum* f. sp. *Batatas* in Sweetpotato

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[Introduction]

Fusarium wilt is the main cause of the decrease in sweet potato yield. Yield loss can be up to 50% and is more prevalent in warm weather and dry soils. Sweetpotato plants showing wilting of the lower stems, yellowing of leaves, and browning of tubular tissue are common in most production areas. Therefore, it is necessary to develop Fusarium wilt resistant varieties using molecular markers to select this trait.

[Materials and Methods]

The Fusarium wilt resistance test of 101 sweetpotato F1 individuals derived from a cross between *F. oxysporum*-susceptible cultivar 'Zami' and resistant cultivar 'Singeonmi' was investigated. This study was carried out to assay the disease severity index of fusarium wilt by rapid screening method via hydroponic system in sweetpotato. The disease was assessed by disease severity index (DI): 0 = healthy, 1 = symptom less than 10% of the stem, 2 = symptoms appearing in 10-25% of the stem, 3 = symptoms appearing in 25-50% of the stem, 4 = symptoms appearing in 50-75% of the stem, and the value for symptom more than 75% of the stem and dead plants was 5. Resistance phenotype was defined as DI<1, moderate resistance as 1<DI≤2.5, and susceptibility as DI>2.5.

[Results and Discussion]

In our previous study, among the 4 types of growth medium for *F. oxysporum*, the clarified V8 medium formed the most spores with an average of 8.8×10^6 conidia/ml. The concentration of V8 juice, the main material of V8 medium, had the highest growth rate of pathogens at 20%. The DI of 'Singeonmi' and 'Jami', parental lines, was 0.1 and 3.8, respectively. This result supports a significant difference in the resistance of parental varieties. The DI of the 101 F1 progenies widely ranged from 0 to 5 by Fusarium wilt. As a result, 57 plants showed resistance, 25 plants showed moderate level of resistance, and 19 plants showed sensitivity. Among them, 25 plants, which showed high level of resistance(no symptom) or sensitivity(almost died) to Fusarium wilt, can be possible to be used for genetic and genomic studies and will accelerate breeding programs for sweetpotato with Fusarium wilt resistance.

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