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과제 일련번호: 3

Development of a SCAR marker for selection of resistant plants to TuMV-C4 in Chinese cabbage.

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The viral disease is one of the major factors causing yield loss of heading Chinese cabbage in Korea. It is mainly occurred by the infection of turnip mosaic viruse(TuMV) transmitted with the aphid. Farmers apply the aphicide to prevent this disease several times during the cropping season. However, severe damage by this disease is so often experienced. There are 5 races from C-1 to C-5 in TuMV. The TuMV-C4 is most virulent among them and generally the resistant plant to this race is tolerant to other races. Even though several tolerant hybrids have been released recently, some sophisticated procedures are involved in breeding the resistant cultivar, such as multiplication and maintenance of the pathogene, cultivation of plants more than 40 days for the inoculation trial and the accurate inoculation and precise reading the symptom, etc. Thus plant breeders desire very eagerly molecular markers available to select resistant plants simply at the early growing stage of the plants. The Amplified Fragment Length Polymorphism(AFLP) was done with the resistant and susceptible bulks consisted of 10 doubled haploids(dihaploids), respectively. They were derived from the microspore culture of an F_1 hybrid between a resistant and a susceptible inbreds to the TuMV-C4. A specific DNA band was presented on the resistant bulk when the DNA was digested with EcoR 1 and Mse 1 and amplified with the primer pair of E+AGG/M+CGT. The band DNA was eluded in the common procedure and sequenced at Solgent Ltd. Several new 22-26mer primer pairs were designed with the full sequence and synthesized at Bioneer Co. They were tested with more than 50 DH lines and finally a pair was selected for advanced tests.

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