Development of DNA marker linked to resistance to two kinds of powdery mildew in tomato

Hyoun-Joung Kim\textsuperscript{1}, Heung-Ryul Lee\textsuperscript{1}, Ji Young Hyun\textsuperscript{1}, Dong-Chan Won\textsuperscript{2}, Dong Oh Hong\textsuperscript{2}, Chee Hark Harn\textsuperscript{1*}
\textsuperscript{1}Biotechnology Institute; \textsuperscript{2}Breeding Institute, Nongwoo Bio Co., Yeoju, Gyeonggi, Korea

Powdery mildew caused by fungus \textit{Oidium lycopersicum} and \textit{Leveillula taurica} Arnaud. has been one of serious diseases in tomato cultivation. These resistances against \textit{O. lycopersicum} and \textit{L. taurica} Arnaud. have been known to be controlled by an incompletely dominant gene \textit{Ol-1 (Mi)} and a single dominant gene \textit{Lv}, respectively. Using the available marker information spreaded throughout tomato genome, we developed DNA markers linked to powdery mildew resistant loci in a codominant fashion. Reported candidate markers for \textit{O. lycopersicum} resistance were screened and a CAPS marker from 32.5Cla resistant marker was selected. Several markers around CT121 which is a RFLP locus with 0.16 cM distance from \textit{Lv}, were screened, and another CAPS marker was developed. These CAPS markers were applied to tomato breeding lines and the results of genotyping were accordant with the disease resistance phenotypes. These resistant trait–related markers against powdery mildew could be practically used for the marker–assisted selection on the early stage seedlings of tomato.

*Corresponding author: Tel. 031–887–6540, E–mail: chharn@nongwoobio.co.kr