Clin Microbiol 2018, Volume 7
DOI: 10.4172/2327-5073-C4-043

Knockdown expression of the P0 protein from the PLRV genome by inducing the production of the hpRNA and siRNAs of this RNA silencing inhibitor and creating highly resistant strains of the virus

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PLRV is one of the most important pathogens of potato plants around the world. Because of the high damage, the production of a resistant cultivar is very important. RNA silencing is a natural defense mechanism against foreign nucleic acid such as viruses in eukaryotes. This mechanism begins with long dsRNAs and ends with the generation of siRNAs. This method gives virus resistance, but by defending proteins that inhibit RNA silencing from the host genome, this defensive line will be broken. Protein P0 of ORF0 of the PLRV genome, in infected plant cells, is an RNA silencing inhibitor. We have induced this resistance reduced the expression of P0 gene by knocking out the P0 by producing a series of RNA cDNA structures. In this regard, the dsRNA vector of pFGC5491 was designed to perform two cloning in two different directions, which is P0 series hair pin-coding RNA. After the recombinant vector was sequenced and confirmed, Agrobacterium was transferred to Agria cultivar potato. In transgenic plants, after confirmation of the presence of the gene in the genome through various PCRs and ensuring the presence and expression of transcripts in plant cells through RT-PCR and cDNA synthesis, induced RNA silencing was assured. Resistance rate after inoculation of the virus with *Agrobacterium* was done in a leaf of transgenic plants and after 10 days DAS-ELISA and RT-PCR resistance was evaluated.

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