

## Abstract

With respect to the amount of damages resulting from fungal diseases, applying biotechnological technics for producing resistant plants is of a high significance. Complex expression of pathogenesis-related proteins induces multiple gene resistant followed by stability of resistance and also developing resistance toward a wide range of fungal diseases. In the present study with the purpose of isolating the gene, constructing multiple vectors including 3 important group of pathogenesis-related proteins *PR1*, *PR2* and *PR3* were carried out. In this study, after designing specific primers, 2 genes with different characteristics from *PR1* family were isolated from tobacco genome. After the validation test, we cloned the genes under expression of 35S and Nos terminator in the pB121 binary vector. In the next stage cloning of two other important anti fungal gene under control of dependant regulatory regions of T-DNA in the form of symmetric an asymmetric with *PR1* in several steps. In order to transform the mentioned genes to monocotyledons, pIPKb010 vector were used. After adding kozak sequence to the beginning of the gene, the whole gene cassette was constructed. Chitinase and glucunase genes were placed in pIPUbi and after that *kPRP-1* gene were put in the middle of the mentioned gene cassette. It is expected that the three constructed vectors in this study putting up the resistance against a wide range of fungal diseases in monocot and dicot plants as well as showing potential resistance towards the bacteria and also abiotic and biotic stresses. Eventually the constructs can be used for gene transformation by agrobacterium and biolistic gun. One of the constructs were used to transform tomato plants. Molecular analysis showed the presence of three Chitinase, gluconase and *PR1* transgenes.

**Key words:** Pathogenesis related protein, gene cloning, Chitinase, Glucunase, *PR1*, kozak segment



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Title

**Isolation of *PR1* gene from Tobacco  
genome and its cloning with *PRII* &  
*PRIII* genes**

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