

## SILENCING OF RNA DIRECTED RNA POLYMERASE 1 GENE OF TOBACCO LEADS TO ENHANCED RESISTANCE TO SOME PLANT VIRUSES \*

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### Abstract

RNA directed RNA polymerase 1 (*RDR1*) expression is induced by virus infection and appears to be involved in resistance to infection by some viruses. In the present study, reactions of two transgenic tobacco (*Nicotiana tabacum* cv. Samsun NN) lines in which the expression of their *RDR1* gene was silenced were assessed against several plant viruses under greenhouse conditions. Silencing the *RDR1* gene in tobacco led to no change in the response to virus infection but in others, as expected, an enhanced susceptibility to tobacco mosaic virus was observed. By contrast, lines of tobacco with silenced *RDR1* gene showed enhanced resistance to infection by several viruses, viz., tobacco rattle virus (genus *Tobravirus*) and tomato bushy stunt virus (genus *Tombusvirus*). These results suggest that complex interactions occur between the innate resistance pathways, so inhibiting one component involved in resistance may show effects on other aspects of innate resistance. Nevertheless, suppressing *RDR1* gene expression may provide novel, broad-spectrum resistance to a range of viruses.

**Keywords:** Defense response, Resistance, Gene silencing.

See Persian text for figures and tables (Pages            ).

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