Title: Engineering and expression of a RhoA peptide against respiratory syncytial virus infection in plants

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Abstract:

Respiratory Syncytial Virus (RSV) is one of the leading causes of viral lower respiratory tract disease in infants and young children worldwide, leading to an increase in severe cases and hospitalizations. Currently there is no vaccine against RSV, and the few existing treatments are based on the use of expensive monoclonal antibodies. Alternatively, for more than a decade the peptide derived from the RhoA protein has been used as a potential inhibitor of RSV infection, however, there are several challenges such as improving the bioavailability of the peptide, developing an efficient delivery system and identifying a profitable production platform. In this work, a peptide derived from the RhoA protein was designed, synthesized by fusion PCR and coupled to different carrier molecules. Different genetic constructions were generated and tobacco plants were transiently transformed. The levels of recombinant protein produced in the plants were evaluated and its purification was subsequently carried out. *In vitro* tests of the recombinant protein obtained demonstrated a higher percentage of antiviral activity against Respiratory Syncytial Virus compared to the control (synthetic Rho A peptide).