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Stylar glycoproteins bind to S-RNase in vitro

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Objectives

We have characterized Nicotiana gene products that interact directly to S-RNase.

Materials and Methods

1. Material

   Plant-*Nicotiana* plants

2. Methods

   Immobilized Affi-gel, modified 2D gel system, and immunoblott were used for approaches to identifying factors that interact with Nicotiana S-RNAse

Results and Discussion

S-RNases determine the specificity of S-specific pollen rejection in self-incompatible plants of the Solanaceae, Rosaceae, and Scrophulariaceae. They are also implicated in at least two distinct types of unilateral interspecific incompatibility in Nicotiana. However, S-RNase itself is not sufficient for most types of pollen rejection, and evidence for its direct interaction with pollen tubes is limited. Thus, non-S-RNase factors also are required for pollen rejection. As one approach to identifying such factors, we tested whether SC10-RNase from Nicotiana alata would bind to other stylar proteins in vitro. SC10-RNase was immobilized on Affi-gel, and binding proteins were analyzed by SDS-PAGE and immunoblotting. In addition to SC10-RNase and a small protein similar to lily chemocyanin, the most prominent binding proteins include NaTTS, 120K, and NaPELPIII, these latter three being arabinogalactan proteins previously shown to interact directly with pollen tubes. We also show that SC10-RNase and these glycoproteins migrate as a complex in a native PAGE system. Our hypothesis is that S-RNase forms a complex with these glycoproteins in the stylar ECM, that the glycoproteins interact directly with the pollen tubes and thus that the initial interaction between the pollen tube and S-RNase is indirect.

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