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Biological function of a heterologous partitivirus infecting *Botrytis cinerea*

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Viruses are ubiquitous parasites of cellular life on Earth. Unprecedented fungal virus diversity has also been characterized over the past decade. The influences of virus to host are various. Mycoviruses impairing the virulence of phytopathogenic fungi catch the attention of phytopathologists. Partitiviruses usually mediate persistent and cryptic infections of their hosts, especially for plant partitiviruses. Previously, we identified a typical partitivirus, *Sclerotinia sclerotiorum* partitivirus 1 (SsPV1), in strain WF-1 of *Sclerotinia sclerotiorum*, and confirmed that this partitivirus confers hypovirulence on its host. *Botrytis cinerea* is phylogenetically close to *S. sclerotiorum*. Herein,

Purpose: we investigated the effect of SsPV1 replication in strain B05.10 of *B. cinerea*.

Methods: The purified SsPV1 virion was successfully introduced into virus-free strain B05.10 by PEG-mediated transformation.

Results and conclusions: Virus infection suppressed hyphal growth and boosted hyphal branching frequency. SsPV1 also causes hypovirulence in strain B05.10 as that was observed in *S. sclerotiorum*, which may relate to delay infection cushion development. Although there is no influence of SsPV1 to conidiation of B05.10 strain, SsPV1-infecting B05.10 strain produces more and smaller sclerotia on PDA medium.

Methods and results: Gene expression analysis of SsPV1 infecting hyphal growth phase was analyzed and we found that two clusters of melanin related genes and botcinic acid genes are significantly down-regulated due to SsPV1 infection.

Conclusions: Altogether, our research implied some new clues to understand the mechanism by which SsPV1 causes host hypovirulence.