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The genome organizations and functions of DsRNA Mycoviruses from the Phytopathogenic Fungus *Rhizoctonia solani* Kühn

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Mycoviruses have been found in more and more filamentous fungi, yeasts and oomycetes, but unlike most known animal or plant viruses, they are usually associated with symptomless. Some mycoviruses can cause hypovirulence in phytopathogenic fungi and thus can be used as the biological control agents of plant diseases. Most of the characterized mycoviruses contain double-stranded RNA (dsRNA) genomes. *Rhizoctonia solani* Kühn is one of the notorious soil-borne phytopathogenic fungi with wide host range. In the present study, dsRNA viruses with multiple segments ranging from 1.7 to 9.0 kbp in size were detected in 16 of 43 strains of *R. solani*, the casual agent of rice sheath blight. The genome organizations and functions of two dsRNA mycoviruses, from two strains of *R. solani*, were described in this study. Firstly, we characterized a novel unclassified dsRNA mycovirus, RsRV1, from strain B275. Phylogenetic analysis of the complete genome of RsRV1 clearly indicated that it does not fit any of the known virus group and belongs to a new family of mycovirus. Secondly, another novel mycovirus, RsPV2, conferring hypovirulence and closely related to viruses in the genus Alphapartitivirus from strain GD-11 was also characterized. Moreover, an endornavirus and a partitivirus infecting strains GD2 and D122 respectively have been identified recently in our laboratory, and their sequencing, assembling and functional analyses are in progress. Taken together, dsRNA mycoviruses may be common among the population of *R. solani* and some of them might play potential roles in the biological control of rice sheath blight disease.

Biography

Erxun Zhou has completed his Ph.D. at the age of 31 years from Nanjing Agricultural University, China and postdoctoral studies from South China Agricultural University (SCAU), China. He is the head of the Laboratory of Tropical & Subtropical Mycology, SCAU, China. He has published more than 100 scientific papers in peer-reviewed journals.

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