ISBN 978-85-66836-17-2

EXPLORATION ON Sclerotinia sclerotiorum VIRUS DIVERSITY AND THEIR POTENTIAL APPLICATION FOR FUNGAL DISEASE MANAGEMENT. S. WU[1,2], J. CHENG[1,2], Y. FU[2], T. CHEN[2], D. JIANG[1,2], J. XIE[1,2]*. [1]State Key Laboratory of Agricultural Microbiology, Huazhong Agricultural University, Wuhan 430070, Hubei Province, China / [2]The Provincial Key Lab of Plant Pathology of Hubei Province, College of Plant Science and Technology, Huazhong Agricultural University, Wuhan 430070, Hubei Province, China.
E-mail: jiataoxie@mail.hzau.edu.cn

Rapeseed (*Brassica napus*) stem rot caused by *Sclerotinia sclerotiorum* is the most important disease on rapeseed in China. Mycoviruses are viruses that infect fungi and replicate in fungal cells, and they are found in nature commonly. Hypovirulence-associated mycoviruses of fungal plant pathogens have attracted much attention because of their potential as biological control agents against plant fungal diseases. Hypovirulent strains of *S. sclerotiorum* are increasingly recognized to harbor great diverse mycoviruses. They possess diverse genomes of mostly ssRNA, dsRNA and rarely circular ssDNA. Those newly founding mycoviruses associated with hypovirulence contribute to exploit new potential virocontrol agents for rapeseed rot disease. However, the spread of RNA mycoviruses is limited among vegetatively incompatible individuals, and this limitation is regarded as one of the critical factors responsible for reducing the efficacy of hypovirulence-associated RNA mycoviruses in controlling fungal diseases. The hypovirulence-associated Sclerotinia sclerotiorum mycoreovirus 4 (SsMYRV4), was found to function as a potent inhibitor of G protein signaling pathway, ROS production and vegetative incompatibility-mediated PCD. Furthermore, SsMYRV4-infected strain could easily accept other viruses through hyphal contact and these viruses could be efficiently transmitted from SsMYRV4-infected strain to other vegetatively incompatible individuals. Thus, we concluded that SsMYRV4 is capable of suppressing host vegetatively incompatible reaction and facilitating heterologous viruses transmission among host individuals. These findings may enhance our understanding of virus ecology, and provide a potential strategy to utilize hypovirulence-associated RNA mycoviruses to control fungal diseases.

Keywords: Mycovirus; Diversity; Virocontrol.