

## Transcriptome analysis of *Cucumis metuliferus*-*Meloidogyne incognita* interaction reveals key genes that play important role in resistance to the pest

Deyou Ye, Yonghong Qi and Minquan Li

Gansu Academy of Agricultural Sciences, China

Root-knot nematodes (*Meloidogyne* spp.) cause serious threat to cucumber production throughout the world. *Cucumis metuliferus*, a relative of cucumber, is reported to be resistant to *Meloidogyne incognita*. However, the underlying resistance mechanism remains unclear. Here the response of resistant *C. metuliferus* strain CmR07 following the nematode infection was studied in comparison with susceptible *C. sativus* cv. Jinlv No.3. Roots of selected *Cucumis* seedlings were analysed using histological and biochemical techniques. Transcriptome changes of the resistant reaction were investigated by RNA-seq. Our present results showed that penetration and development of the nematode in resistant plant were reduced when compared to susceptible plant. Infection of resistant genotype with *M. incognita* resulted in a hypersensitive reaction. The induction of phenylalanine ammonia lyase and peroxidase activities after infection was greater in resistant roots compared with the susceptible one. Several most relevant genes from the phenylpropanoid biosynthesis, plant hormone signal transduction and plant-pathogen interaction pathway that are involved in resistance to the nematode were significantly altered. The resistance in CmR07 to *M. incognita* is associated with reduced nematode penetration, retardation of nematode development and hypersensitive necrosis. The expression of genes resulting in the deposition of lignin, toxic compounds synthesis, suppression of nematode feeding and resistance protein accumulation, and activation of several transcription factors, all which might contribute to the resistance response to the pest. These results would lead to a better understanding the resistance mechanism and aid in the identification of potential targets resistant to the pest for cucumber genetic improvement.

### Biography

Deyou Ye has completed his PhD from College of Horticulture, Nanjing Agricultural University of China. He is the Director of lab for Institute of Vegetables, Gansu Academy of Agricultural Sciences. He has published more than 20 papers in reputed journals of China. At present, he is engaged in the research on root-knot nematodes in vegetables.

ydy287@163.com

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