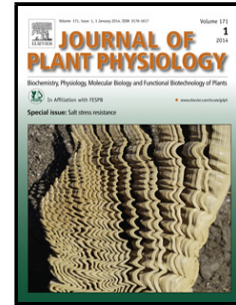


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**Alpha-momorcharin enhances *Tobacco mosaic virus* resistance in tobacco<sup>NN</sup>  
by manipulating jasmonic acid-salicylic acid crosstalk**

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**Abstract** Alpha-momorcharin ( $\alpha$ -MMC) is a type-I ribosome inactivating protein (RIP) with a molecular weight of 29 kDa found in plants. This protein has been shown to be effective against a broad range of human viruses and also has anti-tumor activities. However, the mechanism by which  $\alpha$ -MMC induces plant defense responses and regulates the *N* gene to promote resistance to the *Tobacco mosaic virus* (TMV) is still not clear. By using pharmacological and infection experiments, we found that  $\alpha$ -MMC enhances TMV resistance of tobacco plants containing the *N* gene (tobacco<sup>NN</sup>). Our results showed that plants pretreated with 0.5 mg/ml  $\alpha$ -MMC could relieve TMV-induced oxidative damage, had enhanced the expression of the *N* gene and increased biosynthesis of jasmonic acid (JA) and salicylic acid (SA). Moreover, transcription of JA and SA signaling pathway genes were increased, and their

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