

Effect of 2b Protein of Cucumber Mosaic Virus on Life History Traits of *Myzus persicae*

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Cucumber mosaic virus (CMV) causes significant losses in many crops, and one of the key vectors of CMV is *Myzus persicae* Sulzer (Aphididae). CMV 2b protein is a counter-defence factor and symptom determinant. Effect of the 2b protein on aphids was well investigated using 2b deleted mutant viruses. However, the detailed description of the dynamic change in aphid performance in 2b expressing transgenic plants has not been reported. We investigated the effect of 2b protein on aphid vectors using 2b transgenic *Nicotiana benthamiana*. The estimated survival percentages of aphids 30 days after the introduction to 2b transgenic and wild-type plants were 60% and 22.5%, respectively. Even though early reproductive maturity of aphids was reported on wild-type plants, the total population over a 30-day period was significantly ($P=0.00$) higher in aphids on 2b transgenic plants compared to that of wild-type plants. The mean fecundity over a 30-day observation period was 24.5 and 10.4 for aphids grown on 2b transgenic and wild-type plants, respectively. However, there was no significant difference ($P=0.117$) in the intrinsic rate of increase (m_r) of the aphids grown on 2b transgenic plants and wild-type plants. The longevity of aphids was significantly higher on 2b transgenic plants compared to that of wild-type plants ($P=0.012$). Similarly, 2b transgenic plants are significantly more susceptible to *M. persicae* in terms of time for 1st probing ($P=0.004$) and duration of phloem sap-feeding ($P=0.011$). According to our results, we conjecture that the CMV 2b protein plays a significant role in modification of life history traits of *M. persicae*.

Keywords: 2b protein, Cucumber mosaic virus, *Myzus persicae*

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