Antifeedant and Insecticidal Effects of Mandelic Acid on the Brown Planthopper *Nilaparvata lugens* Stål

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To study the effects of mandelic acid (MA) on the brown planthopper (BPH), *Nilaparvata lugens*, the survival rate and behaviour of BPH fed on an artificial diet with different dosages of MA was observed. The survival rate of BPH decreased with the increase of the MA concentration and feeding time. In contrast to the control, the survival rate of BPH 72 h after feeding decreased significantly. Electrical penetration graph (EPG) data indicated that MA absorbed by the rice plant from Kimura B solution significantly affected the feeding behaviour of BPH. At the concentrations of 0.1, 0.5, and 1.0 mg/ml, duration of the phloem ingestion of BPH decreased from 115.34 min (control) to 30.41, 7.63, and 0.36 min, respectively. Periods of xylem ingestion of MA-treated BPH were significantly shorter than those of the control (50.44 min). Moreover, BPH spent more time walking around or being at rest on MA-treated rice plants, as well as in stylet activities. The GST (glutathione *S*-transferase) activity of BPH increased with the increasing MA concentration, while the GPX (glutathione peroxidases) activity did not change significantly. The results indicate that MA has an antifeedant and insecticidal effect on BPH.

Key words: Mandelic Acid, *Nilaparvata lugens*, Antifeedant Effect, Insecticidal Activity