



Protein Elicitor PeBL1 of *Brevibacillus laterosporus* enhanced resistance against *Myzus persicae* in cucumber

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Abstract:

Greenpeach aphid *Myzus persicae*, a major pest in cucumber, is typically managed by the use of chemical pesticides. In the present study, the potential of a protein elicitor (PeBL1) of *Brevibacillus laterosporus*, a bacterial entomopathogen, to induce a defense response in cucumber against *M. persicae* was studied. Second and third generation *M. persicae* showed a decreased intrinsic rate of increase in treatments with PeBL1 as compared to treatments with positive and negative controls water and $70.58 \mu\text{g mL}^{-1}$ (50 mM Tris-HCl, pH 8.0). *M. persicae* presented fondness for inhibiting control and compared to PeBL1 treated seedlings in cucumber in host selection assay. Nymphal development time of aphids was extended with PeBL1 treatments. Likewise, fecundity was reduced, with less offspring produced in treated samples as compared to control. Moreover, growth and surface structure enhanced in PeBL1 treated cucumber leaves because of the wax and trichomes formation, which has lethal effect on the *M. persicae*. Seedlings of cucumber treated with PeBL1 showed significant accumulation in Jasmonic acid (JA), salicylic acid (SA) and ethylene (ET). Findings from the present study showed that to overcome the colonization and to decrease the reproduction of *M. persicae* PeBL1 meaningfully modified the leaf structure of cucumber. Activation of JA, SA and ET pathways included defense processes. Findings from the present study provide novel evidence for use of PeBL1 in the protection of cucumber from *M. persicae*.

Keywords: PeBL1; *Myzus persicae*; Aphid resistance; Defense Pathways

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