

An Evidence that Entomopathogenic Bacteria Share Inhibitor of Insect PLA₂

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Entomopathogenic bacteria, *Xenorhabdus* and *Photorhabdus*, inhibit phospholipase A₂ (PLA₂) to exhibit their potent pathogenicity. We raised a hypothesis that entomopathogenic bacteria share a mechanism to inhibit target insect PLA₂. Here, we further analyzed PLA₂ inhibition pattern of another type of entomopathogenic bacterium, *Enterococcus faecalis*, and compared with that of a non-entomopathogenic bacterium, *Pseudomonas fluorescens*. *E. faecalis* exhibited potent insecticidal activity on fifth instar larvae of *S. exigua*, while *P. fluorescens* did not. Hemocyte nodulation and phenoloxidase (PO) of *S. exigua* were inhibited by live *E. faecalis*, but not by *P. fluorescens*. Dexamethasone, a specific PLA₂ inhibitor, inhibited hemocyte nodulation and PO activity in both bacterial treatments. The inhibited hemocyte nodulation and PO activity in *E. faecalis*-infected larvae were reversed by the addition of arachidonic acid (AA), a catalytic product of PLA₂. However, AA did not any effect of the larval infected with *P. fluorescens*. These results indicate that an entomopathogenic bacterium, *E. faecalis* inhibited PLA₂ to exhibit its pathogenicity as did *Xenorhabdus* and *Photorhabdus*, and support the hypothesis that entomopathogenic bacteria share a pathogenic mechanism to inhibit PLA₂.