

The Bacterium *Xenorhabdus nematophilus* Depress Cellular Immune Reaction to Infection by Inhibition Phospholipase A2 in Tobacco Hornworms, *Manduca sexta*

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Eicosanoids leads to nodulation that is a kind of cellular immune response to bacterial infection in insects. Phospholipase A2 (PLA2) is responsible for releasing arachidonic acid from cellular phospholipid, and is thought to be first step in eicosanoid biosynthesis. Previous research in our laboratory showed that *Xenorhabdus nematophilus* which is a symbiotic bacterium of entomopathogenic nematode, *Steinernema carpocapsae* depress nodulation in *Spodoptera exigua*. In this study, we report that *X. nematophilus* depress nodulation in another insect species, the tobacco hornworm, *Manduca sexta*. Also, PLA2 activity analyzed using by radioactive phosphatidylcholine (1-palmitoyl, 2-arachidonyl [arachidonyl-1-¹⁴C]). This bacterium reduced the PLA2 activity in *M. sexta* and that the bacterial dose effect were expressed in a dose-dependent manner from 0 to 10⁸ cfu/ml as bacterial concentration. PLA2 activity increased after 1 min post bacterial injection but decreased until 120 min compare with the manduca saline buffer (MSB) injection. Injection of heat-killed bacterium (10⁶ cfu/ml) increased the PLA2 activity. Organic fraction of bacterial cultured medium (Tryptic soy broth, TSB) extracted from ethyl acetate affects to depress the PLA2 activity. These results indicate that *X. nematophilus* was affect to PLA2 activity in some lepidopterous insects and its organic fraction also related with PLA2 activity.