

**3-3-7. *Xenorhabdus nematophilus* Inhibits Phospholipase A₂ (PLA₂)
That is Susceptible to a Secretory PLA₂ Inhibitor,
p-Bromophenacyl Bromide in Beetarmy worm,
Spodoptera exigua Hübner**

Park Youngjin* and Yonggyun Kim

Department of Agricultural Biology, Andong National University

Eicosanoids are one of important immune mediator and plays cellular immune response as phagocytosis, encapsulation, and nodulation against to bacterial cascade in invertebrates. Phenoloxidase (PO) also related with hemolymph melanization after molting and bacterial infection in the insect correlation with eicosanoids and converted from the prophenoloxidase (proPO) to PO by tyroninase in hemocoel. Eicosanoids biosynthesis depends on phospholipase A₂ (PLA₂) released from phospholipids of cell wall composition. Generally the PLA₂ divide with two PLA₂ as secretory PLA₂ (sPLA₂) and cytosolic PLA₂ (cPLA₂) in the group II (nonpancreatic) PLA₂. Previously study in our laboratory show that *Xenorhabdus nematophilus*, which is a symbiotic bacterium of entomopathogenic nematode, *Steinernema carpocapsae*, directly suppressed PLA₂ activity in beetarmy worm, *Spodoptera exigua*. In this study, we reported that organic fraction from *X. nematophilus* growth medium by ethyl acetate also depressed PLA₂ activity and has the mortality to insect by injection but not aqueous fraction. When the sPLA₂ inhibitor, *p*-bromophenacyl bromide (BPB) was treated to insect hemolymph, it depressed PO activity but cPLA₂ inhibitor, methylarachiconyl fluorophosphate (MAFP) reversely increased PO activity in *S. exigua*. Moreover, 10ng of BPB decreased PO activity in serum free hemocytes and plasma from hemolymph of *S. exigua* but same volume of MAFP not affects to free hemocytes and plasma. Finally, when 10ng of BPB injected to 5th instar larvae of *S. exigua* infected with *Escherichia coli*, nodulation is decreased than same volume of control as acetone. These results suggest that *X. nematophilus* inhibits PLA₂ that is susceptible to a sPLA₂ inhibitor, BPB in *S. exigua*.