

# Purification and Antimicrobial Activities of Lysozymes in the Hemolymph of Wax Moth Larvae, *Galleria mellonella*

Yu, Kyoung Hyeon, Young Shin Lee, Shin Yong Park,  
Chang Soo Kang and In Hee Lee

Department of Life Science, Hoseo University, Asan City, Choongnam-Do

Lysozyme that hydrolyses the  $\beta$ -1,4-glycosidic linkage between *N*-acetylmuramic acid and *N*-acetylglucosamine in the peptidoglycan layer of bacterial cell walls, is a widely distributed enzyme found in bacteriophage, microbes, plants, invertebrates and vertebrates. Together with antibacterial peptides such as cecropins, lysozyme is regarded as an important humoral factor in insect defense system against invading pathogens. Lysozymes have been identified in a variety of insects (*Hyalophora cecropia*, *Manduca sexta*, *Drosophila melanogaster*, *Aedes aegypti* etc) and characterized. In response to bacterial infection, lysozyme appeared in the hemolymph of *G. mellonella* larvae. The enzyme was isolated and purified by acid extraction, gel filtration, preparative acid-urea PAGE and C18 reversed-phase HPLC. The molecular mass of the purified protein is determined to be about 14 kDa on SDS-PAGE gel. Although *G. mellonella* lysozyme was already purified and characterized, cDNA structure and antimicrobial spectrum have not been confirmed yet. Therefore, we would work to further characterize *G. mellonella* lysozyme. Also, because the lysozyme is a major inducible antimicrobial protein in the hemolymph of *G. mellonella*, our future studies performing with lysozyme might elucidate a critical insight into insect defense mechanism. We are underworking cDNA cloning and preparing polyclonal antibody against *G. mellonella* lysozyme.