Lethal Attribute of Serine Protease Secreted by *Vibrio alginolyticus* Strains in Kuruma Prawn *Penaeus japonicus*

Ferng-Ruey Chen, Ping-Chung Liu and Kuo-Kau Lee*

Department of Aquaculture, National Taiwan Ocean University, 2, Pei-Ning Road, Keelung, Taiwan. Fax: 008862 24633150. E-mail: kklee@ntou66.ntou.edu.tw

* Author for correspondence and reprint requests

Z. Naturforsch. **55c,** 94–99 (2000); received September 9/November 8, 1999

Extracellular Products, Lethality, *Penaeus japonicus*, Serine Protease, *Vibrio alginolyticus*

Toxicity of the extracellular products (ECP) and the lethal attribute of serine protease secreted by five pathogenic *Vibrio alginolyticus* strains from various sources in kuruma prawn *Penaeus japonicus* were studied. The ECPs of organisms originally isolated from diseased kuruma prawn or small abalone *Haliotis diversicolor supertexta* were more lethal (LD_{50} value of 0.48 or 0.41 μg protein/g prawn) than those from diseased tiger prawn *P. monodon*, yellowfin porgy *Acanthopagrus latus* or horse mackerel (LD_{50} value of 0.98–1.17 μg protein/g prawn). All the ECPs manifested strong, weak and no activities against gelatin, sheep erythrocytes and chitin, respectively. In immunodiffusion tests using rabbit antiserum to a purified 33 kDa serine protease of strain Swy against ECP of each tested strain produced one single precipitation band in each treatment. Furthermore, the serine protease was suggested to be the dominant protease secreted by *V. alginolyticus* strains tested since the majority of enzymatic activity of the respective ECP was inhibited by phenylmethanesulfonyl fluoride (PMSF). A higher inhibition of serine protease activity by PMSF resulted in lower mortality rate of the ECPs injected into the prawns suggesting that the protease is one of the major lethal factor(s) secreted by *V. alginolyticus*.