

Purification, electron microscope and crystallization analyses of the insect infecting viruses

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Abstract

Due to the warm temperature and humid climate in whole world, this suitable environment with highly diversity nectar sources can provide for insect habitats and propagated. The insect are vital pollinators for wildlife plants and agriculture crops as well. However, disease is a major impact on insect industry since insect farming became a significant commercial entity in this century. Major pathogens (i.e. viruses, bacteria, fungi and mite) and environmental (i.e. chemical exposure, forage availability) have emerged as serious diseases of farmed insect following with colony collapse disorder (CCD). Notably, the relatively limited expansion of the insect culture is the constant appearance of the infectious diseases caused by several infected viruses. An assemblage of 240 viral CPs forms a non-enveloped icosahedral $T=4$ virus with approximately 35~40 nm in diameter and two isoforms of viral CPs with a molecular mass of about 59 and 57 kDa, respectively show a high similarity except the N-terminal and middle parts. The structure investigations of two isoform insect infecting viruses will be simultaneously performed with cryo-electron microscopy and protein crystallography. The first high-resolution structures and functional studies of the insect infecting viruses will provide us a better understanding of its capsid conformation and the mechanisms of the capsid assembly and viral infection.

Keywords – *Insect infecting virus, cryo-EM, X-ray crystallography.*

Reference

- [1] M. J. Rohovie, M. Nagasawa, and J. R. Swartz, "Virus-like particles: Next-generation nanoparticles for targeted therapeutic delivery" vol. 2, no. 1, pp. 43-57, March 2017.