

WHITE SPOT SYNDROME VIRUSE ENTRY IS MULTIPLE WAYS DEPENDENT

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ABSTRACT

Whit spot syndrome virus (WSSV) is a lethal pathogen that threatens the aquaculture of many crustacean species, both in seawater and freshwater. However, our present understanding of its viral pathogenesis, particularly the molecular mechanisms at the early stage of viral entry, is still limited. By multiple investigations from viral observation in situ to functional study of host molecules in this study, we clearly provide novel evidence that WSSV enters crayfish hematopoietic tissue (Hpt) cells via multiple endocytic pathways, including clathrin-mediated endocytosis, macropinocytosis and caveolae-mediated endocytosis, at the molecular level. Intriguingly, autophagy and a key autophagy-related protein Cq-GABARAP were shown to be indicated in WSSV entry into Hpt cells for the first time. This study definitely provides interesting discovery on virus-crustacean interactions and particularly for innate immunity against virus infection in crustaceans. Hence, our findings not only expand our knowledge of WSSV pathogenesis but also suggest novel strategies to combat WSSV disease in aquaculture.

KEYWORDS

white spot syndrome virus, endocytosis, autophagy, GABARAP, viral entry

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