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Functional elucidation of *PvRaf* from *Penaeus vannamei* using RNA interference

Joseph Carlo V Vergel and Mary Beth B Maningas
University of Santo Tomas, Philippines

Shrimp aquaculture is a major source of income in the intertropical countries of the Southeast Asian region. However, a great decline in production was observed due to a major viral pathogen, the White Spot Syndrome Virus (WSSV) which continues to prevail despite many preventive measures applied to deter the virus. RNA interference (RNAi) technology has been employed to reveal functions of sequence specific genes in the virus and its host with the aim of controlling WSSV by elucidating complex host-virus interactions. RNAi is a relatively new technology that introduces double stranded RNA to specifically destroy cognate mRNA. This study reports the first record of *Raf* gene in a crustacean system. *PvRaf* serves as central intermediate in many signalling pathways, ultimately regulating cell proliferation, differentiation, development, and innate immune system responses, by connecting upstream tyrosine kinases with downstream serine/threonine kinases. Moreover, *PvRaf* is ubiquitously expressed in the vital organs of the shrimp suggesting that it is essential to metabolic functions of the shrimp and may also play a role in its innate immune system as highlighted in its expression in the haemocytes. Four set-ups were prepared to analyze the sequence specific silencing of *PvRaf* namely: *PvRaf*-dsRNA treatment, *GFP*-dsRNA treatment, PBS treatment, and naive control. Statistical analysis of the mortality assay indicates that *PvRaf*-dsRNA treatment has a significant protective effect against WSSV compared to *GFP*-dsRNA and PBS treatments.

Biography

Joseph Carlo V Vergel has completed his Bachelor of Science in Biology from the University of Santo Tomas-College of Science, Manila, Philippines. He is pursuing his Master of Science in Biological Sciences with major in Molecular Biology at the UST Graduate School as a research scholar under the Department of Science and Technology-Accelerated S&T Human Resource Development Program. In 2012, he was awarded Bayer Young Environmental Envoy by Bayer and United Nations Environment Programme. In 2014, his research study was among the national awardees of the BPI-DOST Science Awards. In 2015, he bagged the Best Oral Presentation at the 9th Symposium on Diseases in Asian Aquaculture in Ho Chi Minh City, Vietnam and received the Student Travel Award. In 2016, he was awarded a scholarship grant by the Japan Association of Student Services Organization at Yokohama National University, Japan.

vergelcarl@gmail.com

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