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Transcriptomic and proteomic profiling of infectious hypodermal and hematopoietic necrosis virus (IHHNV) in giant freshwater prawns

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Prawn shrimp aquaculture which captured billions of dollars often affected by viral and bacterial diseases which have led to new technologies such as expression and proteomic profiling using Next Generation Sequencing and 2D proteomic being used as an empowerment measures to tackle these problems in a more rapid, cost and effective way. With advancement of these technologies, will next generation sequencing and proteomic profiling be sufficient to explain the actual physiological changes in prawns that are affected from the Infectious hypodermal and hematopoietic necrosis virus (IHHNV), a single stranded DNA virus which is found in host nucleus as membrane bound phagosomes that has cause slow growth in freshwater prawns, deformities in *Peneaus monodon* and death in *Litopenaeus vannamei*. This is the first presentation of the pond bred freshwater prawns that survived the disease outbreak and their bio-physiological changes were captured using Next Generation Sequencing and proteomic profiling. Using muscles of survived and and death prawn muscle transcriptomes, there are five major pathways that are affected and showed significant differential expressed genes which are 312 genes in cellular macromolecular machines, 398 in motor neuronal related disease, 36 genes in antigen processing and presentations, 72 genes in viral myocardiac viral diseases and 100 genes in muscle contraction and oxidative phosphorylation pathways. Protein profiling revealed that ten proteins were significantly up-regulated whereas ten other new proteins were significantly down regulated. The up-regulated protein plays an important role in innate immune system response to infection of *M. rosenbergii* whilst the down regulated protein indicated metabolite and cell function response to environmental changes. The given insights from transcriptome and proteomic results have shown the physiological changes at host level towards the viral infection which indicates why the post-larvae of freshwater prawns can face severe mortality due to these physiological changes that occur when they are young. Epizootic diseases have caused huge economical loses in shrimp and prawn culture. However, within the commercial fresh water prawn aquaculture industry, *M. rosenbergii* seems less susceptible to viral diseases in comparison to paneaids. This is a study that would lead future advance technologies such as CHIP-sequencing, immuno precipitation studies that can be conducted to elucidate the survival of these freshwater prawns in comparison to other peneaid species.

Biography

Subha Bhassu completed her graduation BSc (Biomedical Sciences) in the year 1996 from University Kebangsaan Malaysia, Kuala Lumpur. Later she did her PhD in Molecular Biology from University Putra Malaysia. In the year 2010 she got appointed as CEBAR Biosafety Committee (CBC) Member.

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