

Abstract

Alternative Diagnostic Tools for White Spot Disease [†]

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Abstract: The Queensland prawn production industry is worth >\$87 million annually and the 2016 White Spot Disease (WSD) outbreak caused >\$25 million in losses and complete destruction of all livestock on eight farms in the Logan River region. Whilst the outbreak was restricted to South East Queensland, its source, and hence the risk for re-infection, remains unknown, resulting in a need for ongoing surveillance. Early detection of WSD infection on farms is a high priority which can be facilitated via development of improved diagnostic tools. Current diagnosis requires specialised laboratory testing so there is a need for a simple, rapid, robust in-field diagnostic test to complement this. We have developed an alternative diagnostic tool for WSD that is suitable for use both in the laboratory and at pond-side. Assay performance was evaluated with pure DNA and crude tissue samples with minimal preparation, giving results similar to traditional DNA testing performed in the laboratory. Our assay is sensitive, specific & accurate; gives results comparable to quantitative PCR (current gold standard); has lower reagent costs; fast workflow of <90 min and is field-deployable. Point of care detection for WSD is an important tool for the future, and our assay is an ideal candidate to fill this space as it will complement the current diagnostic tools already available, to help manage high sample loads and facilitate faster disease diagnosis. This will assist in limiting the spread of the virus through early detection and reducing the risk of disease outbreak, thus protecting Queensland's valuable prawn aquaculture industry.

Keywords: White Spot Disease; point-of-care diagnostics; prawn virus surveillance



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