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Evaluation of the Sensitivity of the Flow Through Assay for detection of White Spot Syndrome Virus (WSSV) using a cocktail of Monoclonal antibodies.

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ABSTRACT

A panel of four monoclonal antibodies (C-05, C-14, C-38 and C-56) specific to VP28 of White spot syndrome virus (WSSV) were evaluated individually and in cocktail to increase sensitivity of the Flow Through Assay (FTA) for detection of the virus. Recombinant VP28 and semi purified WSSV was used as antigen for evaluation. Out of the total 11 cocktails and four individual of MABs, 2 MAB cocktails C-05+C-56 and C-14+C-56 exhibited highest sensitivity in the FTA. The two MAB cocktail were 100 times more sensitive than 1-step PCR and nearly equivalent to 2-step PCR for the detection of WSSV. The detection limit of WSSV by MAB cocktail increased by two fold compared to the single MAB C-05 currently being used in (FTA).

Key words: Immunodetection, WSSV, Monoclonal antibodies, Cocktail, FTA

1. Introduction

Of the myriad pathogens that have economic consequences in aquaculture, viruses account for 25% (Kevin *et al.*, 2015). White spot disease (WSD), caused by white spot syndrome virus (WSSV) (Lo *et al.*, 2012) is the most devastating disease of farmed shrimp with social and economic impacts over 15 years on a scale that is seldom seen, even for the most important diseases of terrestrial animals (Peter *et al.*, 2010). An estimated 6 billion US dollars loss has been reported to occur to the shrimp industry worldwide since its emergence (Lightner *et al.*, 2012). WSSV has a very broad host range amongst decapod crustaceans, all of which appear to be susceptible to infection (Leu *et al.*, 2009). Extensive studies have led to development of a wide spectrum of diagnostic tools and techniques ranging from the traditional observation of gross clinical signs to histopathology (Lightner *et al.*, 1996; Mohan *et al.*, 1997; Rajendran *et al.*, 1999). Several genome-based diagnostic methods have been developed, such as *in situ* hybridization (Nunan and Lightner, 1997; Chang *et al.*, 1996),

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