

Evaluation of Double Stranded RNA for the Prevention of Infectious Myonecrosis Virus (IMNV) in *Litopenaeus vannamei*

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Summary and Implications

Double stranded RNA was synthesized *in vitro* with sequences corresponding to portions of the IMNV genome and were injected into shrimp prior to challenge with IMNV. This is the first time these methods have been used to prevent IMN in shrimp.

Introduction

Infectious myonecrosis virus (IMNV) is a non-enveloped, double stranded RNA (dsRNA), member of the *Totiviridae* family that causes severe disease and economic losses in commercially raised shrimp. Currently, there are no available vaccines or therapeutics for IMNV. This experiment analyzed the effects of IMNV RNAi triggers on mortality caused by IMNV.

Materials and Methods

Specific Pathogen Free (SPF) juvenile *L. vannamei* weighing 5 grams were acquired from Shrimp Improvement Systems (SIS) and were acclimated into 200L tanks containing synthetic seawater. Animals were divided into 5 groups with 3 replicates per group and 20 animals per tank. Shrimp were injected with 2 micrograms of dsRNA #1, dsRNA #2, dsRNA #3, dsRNA GFP, or 2% sterile saline.

Forty eight hours following inoculation of dsRNA, animals were challenged by intramuscular injection into the third abdominal segment with a dilution in 2% saline of a previously clarified homogenate of tissue positive for IMNV. Mortalities were recorded and dead or moribund animals were removed for further diagnostic testing (Figure 1).

Results and Discussion

After 30 days, significant differences ($P < .05$) were noted with dsRNA #2 and #3-injected animals as compared to controls according to Oneway ANOVA followed by Tukey's multiple comparison test using SPSS software. No significant differences were evident between animals injected with dsRNA #1, dsRNA GFP or the 2% saline control. This demonstrates that specific dsRNA can prevent mortality to IMNV in a sequence dependent manner, and may provide a method to mitigate disease caused by IMNV.

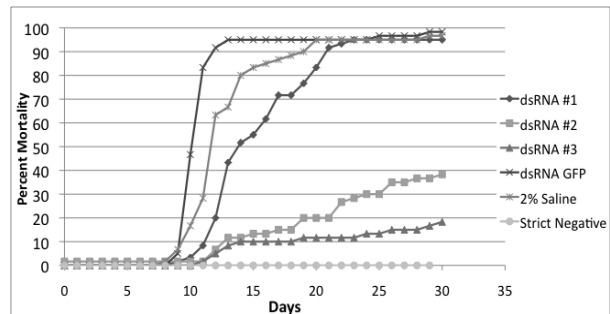


Figure 1. Mortality Curves Following IMNV Challenge.