Introduction

- Viral vaccine formulations may consist of a live attenuated viral strain
- Many viruses have a tropism for the central nervous system (CNS)
- Infectious hematopoietic necrosis virus (IHNV) causes fatal infections in salmonids and is known to have neurotropic manifestations

Objective

The aim of this study is to evaluate the safety of a live attenuated IHNV vaccine in rainbow trout delivered by intramuscular injection (i.m) or intranasally (I.N) to the CNS

Methods

Rainbow trout were inoculated I.N or i.m with 25ul of a 1:10 diluted live attenuated IHNV vaccine or phosphate buffer saline (PBS)

Five fish from each group were sampled 1, 4, 7, 14, 21, and 28 days post immunization (dpi)

Trout received a booster vaccination 28 days after primary immunization in a second trial.

Six fish from each group were sampled 4, 14, and 28 days post boost (dpb)

The presence of IHNV was detected in brain tissue by RT-qPCR

A preliminary study was conducted on healthy, non-vaccinated trout to determine the potential of using Magnetic Resonance Imaging (MRI) to track vaccine fate in the CNS non-lethally

Results

Three i.m injected trout 4 dpi and one i.m injected trout 21 dpi tested positive for IHNV in the first trial

One i.m injected trout tested positive for IHNV 4 dpb and one I.N vaccinated trout tested positive of IHNV 28 dpb

Discussion and Conclusions

This study has determined that I.N vaccination is a safer vaccine method than i.m injection in the IHNV trout model

IHNV was found to have neurotropic manifestations in only four trout in trial 1 and two trout in trial 2. All neurotropic manifestations detected (except one) occurred with i.m injections

Future studies will use MRI as a non-lethal toxicity test to further determine possible localization of vaccines and adjuvants in the brain of trout

References


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