Viral encephalopathy and retinopathy - results from the first interlaboratory proficiency test

A. Toffan*, A. Buratin, M. Toson,
A. Fortin, F. Pascoli and V. Panzarin

Istituto Zooprofilattico Sperimentale delle Venezie, OIE Reference Centre for Viral Encephalopathy and Retinopathy, Legnaro, Padova, Italy

Abstract
Results obtained during the first Interlaboratory Proficiency Test for viral encephalopathy and retinopathy, the most important viral disease for marine fish, are reported in this paper. The proficiency test was primarily designed to assess the capability of different laboratories to detect betanodavirus using Real-Time RT-PCR methods. Blind samples (three spiked with RGNNV betanodavirus at different dilutions and three containing negative culture medium or fish serum) were provided to each laboratory. Information on the protocol applied as well as other relevant information were requested to the participants. Sixteen out of 24 laboratories obtained the maximum score. The remaining 8 laboratories produced a percentage of correct results ranging between 66.67 and 83.33%. The average percentage of correct results was 90.28%, while the average overall agreement was 0.6746. In general, the Real time RT-PCR protocols adopted showed a good sensitivity. On the other hand, test specificity appeared to be the major problem.

Introduction

At a global level, viral encephalopathy and retinopathy (VER) (syn. viral nervous necrosis - VNN) is the most serious viral disease of marine fish and represents one of the major limitations for the development of mariculture (Doan et al., 2016). Due to the wide geographical distribution of the disease and its significant economic impact, diagnosis for VER is becoming one of the most requested analyses both to private and public laboratories. Viral isolation in susceptible cell culture, such as E-11 and SNN-1, still remains the gold standard (OIE, 2016), but recently an increasing number of molecular methods have been developed (Costa and Thompson, 2016). In particular, real time RT-PCR (rRT-PCR) assays are obtaining a growing appreciation for their high sensitivity and rapid turnaround time.

Proficiency testing (PT) is a powerful quality assurance tool enabling laboratories to monitor their performances and compare their analytical results. It supplements the laboratory's quality control procedure with an additional external audit for its testing capability, and at the same time provides laboratories with a sound basis for continuous improvement. It is also a tool to achieve comparability of measurement between different laboratories. An Interlaboratory Proficiency Test for the molecular diagnosis of VNN was therefore organised in May 2016 by the

* Corresponding author's email: atoffan@izsvenezie.it