

**ESTIMATION OF THE REPEATABILITY AND REPRODUCIBILITY OF THREE
DIAGNOSTICS TESTS FOR INFECTIOUS SALMON ANAEMIA VIRUS**

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Shortened version of the title: **PRECISION OF DIAGNOSTIC TESTS FOR ISAV**

Abstract

Reverse transcriptase polymerase chain reaction (RT-PCR), virus isolation (VI) and indirect fluorescent antibody tests (IFAT) are three assays currently used by the salmon industry to identify fish infected with the infectious salmon anaemia virus (ISAV). However, no data are available on the repeatability (within lab consistency) and reproducibility (between lab consistency) of these assays and very limited information is available on the effect of freezing samples on test results. In order to evaluate these assays, 5 laboratories participated in a blinded study of 400 kidney samples representing 4 populations of farmed Atlantic salmon with different prevalence of ISAV. Each laboratory used its own testing protocols. Repeatability and reproducibility were evaluated using kappa as the measure of agreement. The effect of freezing was evaluated using the McNemar test. Freezing did not affect VI but improved the sensitivity of RT-PCR. The repeatability and reproducibility of VI was almost perfect. There was a substantial difference in repeatability of RT-PCR among the 3 laboratories with kappa ranging from 0.5 to 0.96. The repeatability for the RT-PCR was generally low. The repeatability of IFAT was moderate when the IFAT results were analyzed using 1+ and above as positive result. The results of the study show the need to standardize the protocol and interpretation of RT-PCR.

Keywords: Infections salmon anaemia virus; repeatability; reproducibility; diagnostic tests