High sensitivity diagnostic system capable of discriminating between variants of the Infectious Anemia Virus of Salmon

DESCRIPTION

New fast, sensitive and efficient alternative for the diagnosis and characterization of the Infectious Salmon Anemia virus (ISAV), based on a reaction of RT-qPCR in multiplex format that can provide in a matter of hours information regarding the presence or absence of the virus in the sample and, in the case of the presence of the virus, determining some of their relevant genetic characteristics, which may be related to their pathogenicity and thus their behavior in the field. This allows the appearance of a case to be addressed quickly and directly, with a cost-benefit ratio that is very convenient for obtaining information regarding the virus causing an outbreak or its presence in asymptomatic fish. Likewise, it allows determining if it is one or more of a known virus variant, supporting the productive sector in monitoring the disease, as well as in decision-making.

OPPORTUNITY

The outbreak of the Infectious Salmon Anemia Virus (ISAV) produced in the period 2007–2010, decimated the national production of Atlantic Salmon, generating a health, economic and social impact like never seen before in Chile, affecting the continuity of this industry.

As a consequence, the national authority, as well as the productive sector, generated agreed regulations and management strategies and establishing validated diagnostic alternatives that have made it possible to ensure the sustainability of the sector. However, in recent years, the appearance of new variants of diverse pathogenicity has been seen, as well as the coexistence of variants in the same fish, a situation that urgently requires providing the productive sector with a new diagnostic procedure that is more assertive than the current one, capable of accurately and quickly determining the presence or absence of the virus, but at the same time, providing information regarding its pathogenicity.

MARKET

- Network of laboratories registered by Sernapesca
- University and research laboratories
- Pharmaceutical Laboratories
- International laboratories dedicated to diagnosis

ADVANTAGES

1. More robust diagnosis due to the detection of two different genomic segments, each with known functions in the viral cycle.
2. Ability to differentiate virus variants according to their genetic characteristics related to pathogenicity.
3. Ability to detect cases of co-infection of two viral variants by semi-quantitative evaluation of the expression of established markers.
4. Simplicity and speed in obtaining and interpreting results thanks to the algorithm created.

APPLICATIONS

- Potential inclusion in the own monitoring programs of the cultivation companies that grant more quantity and depth in the information for making Productive-Sanitary decisions.
- Potential incorporation as a tool into the Specific Sanitary Program for Surveillance and Control of Infectious Salmon Anemia (PSEVC-ISA) of the National Fisheries and Aquaculture Service (Sernapesca).

▲ Preparation of RT-qPCR reactions for the diagnosis of ISAV in Multiplex format.

INVENTORS

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ACKNOWLEDGMENTS

1. Selection and incorporation of the technology developed under the Copec project in the PUCV's portfolio of marketable technologies. For this reason, a video capsule was made and its graphic printing and design was made.
2. Technology selection in the HubTec Go program, a technology transfer hub of which the PUCV is a partner, whose purpose is to bring the technology closer to the market and support its commercialization process. The technology recently advanced to the Due Diligence stage, culminating in the Hub's Board presentation.

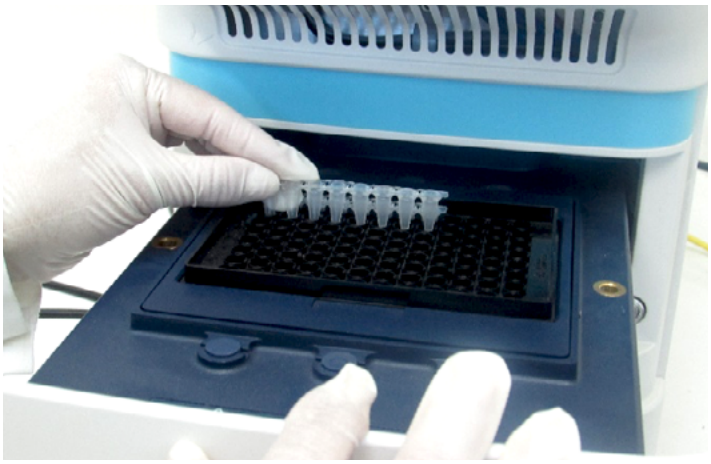
INTELLECTUAL PROPERTY

- Protected by industrial secret
- Pontificia Universidad Católica de Valparaíso and Fundación COPEC-UC
- Patent in process

STATE OF DEVELOPMENT OF TECHNOLOGY

The diagnostic test is optimized and tested on reference and field samples.

The characterization test is in the process of optimization and testing with reference samples.



▲ Sample loading for ISAV diagnosis

FOR MORE INFORMATION

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