Optical Immunoassay (OIA) Kit for Rapid On-site Fish Disease Diagnosis

Technology Overview

Iridoviruses cause systemic diseases in fishes. They are a significant cause of mortality in more than 32 species of cultured marine and freshwater fishes and a few species of ornamental fishes such as the Gourami species, Dwarf gourami, angel fish, guppies, platys and doctor fish. There is a need for on-site iridoviral disease diagnostics that could potentially help in farm biosecurity risk management.

The aquaculture team in Temasek Polytechnic has developed an optical immunoassay (OIA) based iridovirus detection kit "Irido-OIA" that acts as a screening tool for on-site sample processing and detection of iridoviruses in fishes.

Features & Specifications

The kit comprises sample processing (tissue and blood) gadgets, and a disposable test device that can detect both virus and host response (specific antibody response) in a single test.

The Irido-OIA kit has the following key features:

- Detection limit of 5,000 viral particles per ml of processed tissue (0.5g)
- Sensitivity >90%
- Specificity is 100%
- Field deployable
- Rapid detection time within 25 min with a total analysis time of less than 2h
- User friendliness with less logistic load and visual read-out

Customer Benefits

Current technology requires detection of iridoviruses in a laboratory setting which is slow and laborious. The Irido-OIA kit allows for rapid screening of incoming fish stock for better quarantine management. For production farms, the kit can be used conveniently for frequent fish health monitoring. This will enable farmers to take early intervention measures in the event of a disease outbreak, thereby reducing the financial losses which are usually associated with such events.

Potential Applications

The kit can be deployed for detection of iridoviruses in both food and ornamental fishes.

The current OIA platform could be customized to detect multiple pathogens of interest.

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