[1] Prevention and Treatment of Diseases Caused By Fish Pathogens

PREVENTION AND TREATMENT OF DISEASES CAUSED BY FISH PATHOGENS

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Keywords: Fish health, Disinfection, Water, Eggs, UV, Ozone, Electrolyzation, Antimicrobial agents, Drug resistance, R plasmid, fish, vaccination, prophylaxis, Attenuated vaccine, Subunit vaccine, DNA vaccine, Innate immunity, Adjuvant, Cytokine, Glucan, Agglutination, Immunofluorescence antibody test, ELISA, PCR, bacterial and viral pathogens, LAMP, diagnosis, fish and shrimp pathogen, PCR, Marker-Assisted Selection, Linkage analysis, MAS, Transgenic fish, Antimicrobial

peptide, Disease resistance.

Contents

Summary

This chapter describes methods to prevent and/or protect fish from infectious diseases. Chemotherapy using antimicrobial agents and criteria is effective but users should pay attention to avoid the increases of multiple drug resistant strains of fish pathogenic bacteria. Vaccination by injection, immersion and oral methods is important to prevent diseases. Besides formalin-killed and heat-treated vaccines, there are several other types of vaccines, such as attenuated, subunit, and DNA vaccines. Fish rely more on their innate immunity to prevent diseases and immunostimulants generally stimulate innate immune components. Many immunostimulants such as glucans, levamisole, chitin, lipopolysaccharides and nucleotides have been reported to increase protection against bacterial, viral and parasitic diseases in fish.

Diagnostic methods are indispensable to fish farm management and will help in identifying proper therapeutic measures and preventing the spread of diseases. Diagnostic methods currently used are antibody-based diagnosis, detection of specific genes in the target pathogen by polymerase chain reaction (PCR) and the loop mediated isothermal amplification (LAMP) method. In aquaculture, one way to prevent fish diseases is to develop disease-resistant strains of fish through the use of marker-assisted selection (MAS). MAS requires an understanding of the linkage between quantitative trait loci of a target trait and DNA markers. Transgenic technology is applicable to obtain disease-resistant strains of fish. Recent advances in the fish transgenesis for disease-resistance are discussed.

1. PREVENTION AND PROTECTION AGAINST INFECTIOUS DISEASES

1.1. Prevention

Mamoru Yoshimizu and Hisae Kasai

1.1.1. Synopsis

Methods currently used to prevent infectious diseases in hatcheries and seed production facilities are: 1) good hygiene and sanitation, 2) disinfection of culture and waste water, 3) selection of pathogen free brood stock, 4) washing and disinfection of eggs, 5) monitoring the health of hatched fry, 6) temperature control, 7) vaccination, and 8) control of intestinal flora.