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Virus diseases in temperate and tropical farmed fish : state of current knowledge

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Abstract — *It is over 30 years since the development of fish tissue cultures led to the first confirmation of a viral infection in fish (infectious pancreatic necrosis). Since that time, tissue cultures and, more usually, monolayer cell cultures, have been developed from a large number of fish species and have enabled the isolation from a large number of fish species and have enabled the isolation and study of 30 or so viral infections of fish, predominantly those of freshwater, catadromous and anadromous species, and particularly temperate species in the northern hemisphere. However, evidence for numerous other viral infections in fish has also been obtained without successful virus isolation through the visualisation of virus particles by electron microscopy or through experimental transmission of the disease using ultra-filtrates of infected tissues.*

The virus infections for which there is most information are those causing serious diseases in freshwater aquaculture rather than in mariculture, no doubt because of the much higher economic importance of the former, historically, in countries with the necessary laboratory resources for fish virology work. Some of the most sophisticated research techniques in medical and veterinary biotechnology, such as gen sequencing and cloning, recombinant vaccines and monoclonal antibodies are now being employed in the study of some of these fish viruses, especially those of farmed salmonids.

In stark contrast there is a paucity of knowledge on virus infections in cultured marine fish : most of the known viral diseases of marine fish have been found in wild rather than farmed stocks. Information on virus infections in fish farmed under tropical conditions is even more limited due to the relative lack of investigations so far. However, activity in this area will increase as fish farming in the tropics intensifies, serious outbreaks occur and the socio-economic importance of the industry increases thereby justifying the cost of adopting the same techniques which have given success in the study of virus infections in temperate fin fish species.

Example from the range of investigation techniques available are presented and some current approaches to control of virus diseases in fin fish are discussed.