

Editorial for the Thematic Issue on Fish Health and Disease Management II.

The present issue of *Veterinary Medicine* brings together four original research articles that highlight some of the most pressing challenges facing modern aquaculture. As global demand for sustainable fish production continues to grow, safeguarding fish health has become increasingly dependent on an integrated understanding of host immunity, pathogen biology, environmental stressors, and effective disease control strategies. The studies presented in this issue collectively demonstrate how advances in these complementary fields can contribute to healthier and more resilient aquaculture systems.

Two papers focus on the complex interactions between fish and infectious agents. One investigates the efficacy of several orally administered therapeutics against *Ichthyophthirius multifiliis*, one of the most economically important parasitic pathogens in freshwater aquaculture. By demonstrating that treatment success strongly depends on the timing of administration, the study provides valuable insights into practical disease management and identifies promising candidates for further therapeutic development. Another contribution establishes a reproducible immersion challenge model for *Edwardsiella tarda* infection in African catfish. Reliable experimental infection models are indispensable for studying host–pathogen interactions, evaluating vaccine candidates, and testing novel immunostimulants and therapeutics. The model described represents an important methodological advance that will facilitate future research on bacterial diseases affecting cultured fish.

The remaining two articles address factors influencing fish health beyond direct pathogen exposure. One study examines how different aquaculture rearing systems shape immune gene expression in Atlantic salmon during smoltification and following vaccination. The findings demonstrate that the production environment itself can influence baseline immune status and post-vaccination responses, emphasising that husbandry practices should be considered an integral component of disease prevention strategies. The second environmental study explores the long-term effects of polystyrene microplastics containing varying concentrations of the brominated flame retardant hexabromocyclododecane (HBCD). By revealing complex molecular, biochemical, and histopathological responses associated with additive–polymer interactions, the work contributes to our understanding of emerging environmental risks that may compromise fish health in both natural ecosystems and aquaculture.

Taken together, the articles published in this issue illustrate the multidisciplinary nature of contemporary aquatic veterinary research. They span immunology, infectious diseases, experimental pathology, pharmacology, environmental toxicology, and aquaculture management, while sharing a common objective: improving fish welfare through evidence-based science. Their findings not only deepen our understanding of disease mechanisms but also provide practical knowledge that can support more sustainable and resilient aquaculture production.

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