

Drug Administration in Aquaculture

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Editorial

Aquaculture is one of the fastest growing food production sectors in the world, with an average growth rate of 7.1% per year, accounting for 46 of the total food and fish supply. However, disease outbreaks are considered to be a major constraint to the development of this sector, causing huge economic losses worldwide every year. Therefore, a wide range of antimicrobial agents, including antibacterial drugs (antibiotics), pesticides, hormones, anesthetics, pigments, minerals and vitamins, are used to avoid or control diseases in aquaculture. In addition to broodstock facilities, antimicrobial agents are often used in hatcheries to prevent pathogens from being introduced into new facilities during eggs, fry or brooding; prevent diseases from spreading to the wild through hatchery effluent or hatchery fish release or rearing Fish; prevent the spread of pathogens that are already endemic in a watershed.

Antimicrobial agents that are sufficiently non-toxic to the host are often used as chemotherapeutics for the treatment of infectious diseases. Antimicrobial options for the treatment of diseases are becoming more and more limited and expensive. In some cases, due to the emergence of drug resistance in bacteria, this may reverse most of the medical advances in the past 60 years. In aquaculture, antimicrobial is mainly used for therapeutic purposes and as a preventive agent. The use of antimicrobial agents as growth promoters in any aspect of aquaculture is generally rare. As a preventive agent, they are mainly used to limit hatching, the juvenile or larval stage of aquatic animal production. Despite the widespread use of antimicrobial aquaculture facilities, there are limited data on the specific types and quantities required to control infections and diseases. So far, no specific antimicrobial agents have been developed for aquaculture.

Aquaculture has rapidly developed into a major industry that not only provides economic income and high-quality food products, but also provides employment opportunities for hundreds of thousands of skilled and unskilled workers. In different aquaculture practices, intensive fish farming contributes to the development of stress states in aquatic animals, leading to microbial infections and the spread of diseases. The presence of diseases in farmed fish populations has a serious impact on affected fish and unaffected fish. In addition, considering the rapid growth and importance of aquaculture in many parts of the world, the widespread use of antimicrobials is increasing and strengthening, and often unregulated (without professional consultation or supervision) aquatic animal production, which has caused many health problems. Not only for fish, but also for humans. Therefore, more research is needed to determine the consequences of the application of a large number of antibacterial drugs. In addition, safer and more effective drugs are needed, as well as improved animal husbandry and management, so as to reduce the demand for these drugs.

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