OPEN ACCESS Freely available online

ISSN: 2155-9546
Journal of Aquaculture Research & Development

Perspective

Factors Contributing to Resistance in Shrimp Aquaculture

Zakaria Natrah*

Department of Aquaculture, University Putra Malaysia, Selangor, Malaysia

DESCRIPTION

Shrimp aquaculture has witnessed remarkable growth over the past few decades, becoming a significant source of global seafood production. As demand for shrimp continues to rise, so does the pressure on shrimp farmers to ensure the health and productivity of their shrimp stocks. This has led to increased reliance on antimicrobial agents to prevent and treat diseases in shrimp aquaculture. However, the indiscriminate use of antimicrobials poses a serious threat to public health, the environment, and the sustainability of the shrimp industry due to the emergence of Antimicrobial Resistance (AMR). Antimicrobial agents are substances that inhibit the growth of, or kill, microorganisms such as bacteria, viruses, and fungi. In shrimp aquaculture, they are commonly used for disease prevention and treatment. Shrimp are susceptible to various pathogens, including bacteria like *Vibrio species* and viruses like White Spot Syndrome Virus (WSSV). To combat these threats, antimicrobials are often administered through feed, water, or by injection. While antimicrobial use can be effective in controlling disease outbreaks, it is not without consequences. The overuse and misuse of antimicrobials in shrimp aquaculture have led to the emergence of antimicrobial resistance, which is a global public health concern. AMR occurs when microorganisms, such as bacteria, evolve and develop mechanisms to survive exposure to antimicrobials. This renders these drugs less effective or entirely ineffective in treating diseases in both shrimp and humans. Farmers may administer antimicrobials at improper dosages, durations, or frequencies, which can encourage the development of resistance. In many regions, the regulation of antimicrobial use in aquaculture is weak or nonexistent, leading to unchecked antibiotic administration. Residues of antimicrobials can persist in shrimp products that make their way to consumers, contributing to AMR in humans. Antimicrobial residues and resistant bacteria can enter the environment, impacting surrounding ecosystems and transferring resistance genes to other bacteria. AMR can lead to higher production costs due to the reduced efficacy of antibiotics and the need for alternative treatments. Resistant bacteria from aquaculture can enter the food chain and eventually lead to treatment failures in human infections. AMR can disrupt the balance of aquatic ecosystems, with potential consequences for other aquatic organisms. The sustainability of shrimp aquaculture is at risk when the industry relies heavily on antimicrobials instead of more sustainable disease management practices. Governments and international organizations must implement and enforce regulations on the use of antimicrobials in aquaculture. Encourage and support the adoption of Good Aquaculture Practices (GAP) that promotes responsible antimicrobial use, biosecurity, and disease prevention. Invest in research to develop alternative disease management strategies, such as vaccines and probiotics, to reduce reliance on antimicrobials. Implement surveillance systems to monitor and track the occurrence of AMR in shrimp farms. Farmers should be educated on the proper use of antimicrobials, the risks of AMR, and alternative strategies for disease management. The use of antimicrobials in shrimp aquaculture is a double-edged sword. While they have proven effective in protecting shrimp from diseases, their overuse and misuse have raised significant concerns about the emergence of antimicrobial resistance. The sustainable future of the shrimp aquaculture industry depends on responsible antimicrobial use, regulations, and the development of alternative disease management practices. By addressing AMR in shrimp aquaculture, we can protect both the industry and public health while preserving the delicate balance of our aquatic ecosystems.

Correspondence to: Zakaria Natrah, Department of Aquaculture, University of Putra Malaysia, Selangor, Malaysia, E-mail: zakaria@gmail.com

Received: 15-Sep-2023, Manuscript No. JARD-23-23700; **Editor assigned:** 18-Sep-2023, Pre QC No. JARD-23-23700 (PQ); **Reviewed:** 03-Oct-2023, QC No JARD-23-23700; **Revised:** 10-Oct-2023, Manuscript No. JARD-23-23700 (R); **Published:** 17-Oct-2023, DOI: 10.35248/2155-9546.23.14.805

Citation: Natrah Z (2023) Factors Contributing to Resistance in Shrimp Aquaculture. J Aquac Res Dev. 14:805.