



## Antibiotic Resistance Prevention in the Shrimp Aquaculture

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### DESCRIPTION

Farmed shrimp is one of the most popular seafood choices worldwide, and its demand continues to rise. With the growing global population and increasing consumption of seafood, shrimp aquaculture has become a significant industry. However, the intensification of shrimp farming practices has brought about various challenges, one of which is the emergence of antibiotic-resistant *Vibrios*. *Vibrios* are a group of bacteria that are naturally present in marine environments, including shrimp farming ponds. While some *Vibrio* species are harmless, others can cause infections in both humans and animals. These bacteria can multiply rapidly in warm water, making shrimp farming ponds an ideal breeding ground for their proliferation. Antibiotics have been extensively used in shrimp farming to prevent and treat bacterial infections. They are commonly administered to control diseases caused by *Vibrios*, such as *Vibrio harveyi* and *Vibrio parahaemolyticus*. However, the indiscriminate and excessive use of antibiotics in shrimp aquaculture has led to the development of antibiotic-resistant strains of *Vibrios*. Antibiotic resistance occurs when bacteria adapt and become immune to the effects of antibiotics. This can happen through various mechanisms, including mutation and the acquisition of resistance genes from other bacteria. Antibiotic-resistant *Vibrios* pose a significant threat to both the aquaculture industry and public health. The presence of antibiotic-resistant *Vibrios* in farmed shrimp can result in the ineffective treatment of bacterial infections. This can lead to increased mortality rates among farmed shrimp, causing financial losses for farmers. Moreover, the presence of antibiotic-resistant *Vibrios* in shrimp products can also pose health risks to consumers.

Consumers of farmed shrimp may be exposed to antibiotic-resistant *Vibrios* through the consumption of contaminated shrimp. If these resistant bacteria enter the human body, they can cause infections that are difficult to treat with standard

antibiotics. This can lead to prolonged illness, increased healthcare costs, and potentially life-threatening complications. Furthermore, antibiotic-resistant *Vibrios* can also spread from shrimp farms to the surrounding environment, including wild shrimp populations and coastal ecosystems. This can disrupt the natural balance of marine ecosystems and have detrimental effects on biodiversity. To address the problem of antibiotic-resistant *Vibrios* in farmed shrimp, several measures can be taken. Firstly, there needs to be a reduction in the use of antibiotics in shrimp farming. This can be achieved through the implementation of good aquaculture practices, including improved farm management, regular water quality monitoring, and the use of alternative disease prevention strategies such as probiotics and vaccines. Additionally, increased surveillance and monitoring of shrimp farms are essential to identify and track the prevalence of antibiotic-resistant *Vibrios*. This will help in implementing targeted control measures and reducing the spread of these bacteria. Promoting responsible consumption is also significant. Consumers should be educated about the risks associated with antibiotic-resistant *Vibrios* and encouraged to choose shrimp products that are produced using sustainable and responsible farming practices. Collaboration between government agencies, aquaculture industry stakeholders, and researchers is necessary to develop and implement effective strategies to tackle antibiotic-resistant *Vibrios* in shrimp farming. This includes the development of alternative treatments, the promotion of responsible antibiotic use, and the establishment of regulations and guidelines for the aquaculture industry. The emergence of antibiotic-resistant *Vibrios* in farmed shrimp is a concerning issue with implications for both the aquaculture industry and public health. It highlights the need for sustainable and responsible farming practices that reduce reliance on antibiotics. By implementing measures to prevent the spread of antibiotic resistance and promoting responsible consumption, we can work towards ensuring the long-term sustainability of shrimp farming while safeguarding human health and the environment.

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