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Use of Bacteriophage in Aquaculture

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EDITORIAL NOTE

Bacteriophages adhere to particular bacterial hosts and destroy them through internal replication and bacterial lysis. The use of bacteriophages to manage bacterial infections in aquatic food production system has higher potential to handle the twin challenge of controlling bacterial infections and at the same time preventing residue contamination. Phages have benefits over antibiotic usage in aquaculture, they suggest.

Bacteriophages are viruses that infect bacteria. Bacteriophages Bacterial viruses are abundantly found and in water, soil, people or microbium cells. Bacterial viruses are commonly present. Nucleic acid around a protein coat is made of bacteriophages, like other viruses. Bacterial viruses are two primary types:

Lytic or Virulent phages

Through the lysing or death of the bacterial cells these phages infect the bacteria and the cells respond by generating enormous numbers of viruses.

By nature, bacteriophages appear to be highly promising antibacterial treatment options. Phages are quite unique to one bacterial species or another. They are known to be non-toxic to plants and animals, including fish, and are generally increased in titer when infected, propagated and killed.

Lysogene phages

The genome of these phages is incorporated into the host genome and divided into host-bacterial cells. There are also certain filamentous phages that just seep from the cells without harming the cells.

Bacteriophage advantages compared to antibiotics

Antibiotics were the greatest option in aquaculture for the management or treatment of bacterial diseases, but frequent and longer-term antibiotic exposures have led to antibiotics being unregulated and innovative, both as preventive and treatment agents in hatchers as well as farmers. This leads to a significant disease breakdown in aquaculture and a massive economic loss for fish producers. A new and effective approach for treating bacterial infection is being sought to counteract and tackle these challenges. This leads to bacteriophages being applied in aquaculture.

Phages were good sound advantages compared with the usage of antibiotics in aquaculture. The phage root range does not involve a significant side effect; phage-resistant bacteria continue to be likely to have similar target ranges to other phages. Selecting new phases is above all a rather quick procedure, often carried out in days or weeks. On the contrary, antibiotics target pathogen as well as microfloral products with multi-sided effects and are resistant to antibiotics and not only target bacteria, but also a long process which might take a few years to create an antibiotic against antibiotic bacteria resistant to antibiotics.

Applications

The key impediment to phage treatment recently became apparent when the bacterial defence system evolved

phage resistance mechanism. Although it was obviously shown, co-evaluation strategies involving bacteriophagus and harmful bacteria maintain phage treatment for some hopeful survival. Phage-resistant bacteria treatment affects the structural change caused by the virulence mechanism and reduces pathogenicity but the bacteria are not entirely destroyed. To this goal, research activities such as the application of bacteriophaguses against intracellular infections and in all aquaculture taxonomic groups (fish, shrimp etc.) with the efficient cocktail formulation of bacteriophagus as an anti-pathogenic agent for commercial use.