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Scientists develop a novel green alternative to treat *Streptococcus* bacteria in hybrid striped bass

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By Responsible Seafood Advocate

Novel antimicrobial protein and treatment effectively cures *Streptococcus iniae* infections in hybrid striped bass, researchers say

Scientists at the United States Department of Agriculture (USDA)'s Agricultural Research Service (ARS) have developed a green antibiotic alternative to treat the deadly pathogen *Streptococcus iniae* in hybrid striped bass. It's the fourth-most farmed finfish in the United States.

S. iniae is the causative agent of streptococcosis, a disease prevalent in aquaculture and causes a worldwide economic loss of \$150 million annually. Disease outbreaks can bankrupt fish farms and put farmers at risk of getting the disease when handling infected fish.

Current vaccines provide only short-term protection for *S. iniae*, and fish farmers more often rely on antibiotics to treat the disease. ARS scientists aimed to develop a natural treatment since antimicrobial resistance – a process when germs like bacteria and fungi develop the ability to fight drugs designed to kill them – is a major concern for aquaculture farmers when treating bacterial diseases.



Scientists at the USDA have developed a green antibiotic alternative to treat the deadly pathogen *Streptococcus iniae* in hybrid striped bass. Photo credit: Matt McEntire, ARS

“Together with collaborators, we developed a novel antimicrobial protein and treatment regimen, that specifically kills only *Streptococcus* bacteria, and does not leave any chemical residues in the environment,” said Michael Deshotel, research microbiologist at the Harry K. Dupree Stuttgart National Aquaculture Research Center. “According to our study’s results, this protein effectively cures *S. iniae* infections in hybrid striped bass.”



(<https://globalseafood.typeform.com/podcastq124>).

According to Deshotel, the protein, known as ClyX-2, showed a 95 percent survival rate for the fish in the treatment groups in comparison to the 5 percent survival rate of fish in the control groups during the study. The results showed that the protein was statistically as effective at treating *S. iniae* as antibiotic treatments like carbenicillin (85 percent cure rate).

In the future, Deshotel and the researchers plan to study how to treat water to prevent diseases caused by *S. iniae* before they can infect fish.

Read the full study (<https://www.sciencedirect.com/science/article/pii/S1050464823007829?via%3Dihub>).

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