

AUBURN UNIVERSITY

INNOVATION ADVANCEMENT & COMMERCIALIZATION

Contact

Troy Brady
Auburn University
Innovation Advancement
& Commercialization
334-844-4977
troy.brady@auburn.edu
<https://iac.auburn.edu/>
Reference: Columnaris vaccine

Inventors



Dr. Covadonga Arias
Associate Professor
Department of Fisheries and
Allied Aquacultures

Dr. Oscar Olivares-Fuster
Current position:
Agricultural Deputy
City of Gandia, Spain

References:

J Fish Dis. 2011 May; 34(5):
385-94 ([Link](#))
Vaccine. 2013 Oct 25;31
(45):5276-80 ([Link](#))

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Improved Columnaris vaccine that is stable at room temperature

Overview

Columnaris disease is one of the most serious bacterial infections affecting the aquaculture industry today. It can affect nearly all freshwater fish and causes millions of dollars in annual losses for U.S. catfish farmers alone. Current vaccines are only moderately effective. An improved vaccine has now been developed using bacteria derived from a highly virulent strain. The vaccine has been shown to give superior protection to catfish and tilapia, and has possible applications in salmon, trout, and other farmed fresh water fish. With the aquaculture industry booming, there is a need for products that can protect against infection by this pathogen.

Advantages

- Reduces cumulative mortality two to four times better than the existing vaccine
- Protects against both moderately and highly virulent Columnaris disease strains
- Stores conveniently at room temperature for up to a year
- Administers easily using standard immersion methods

Description

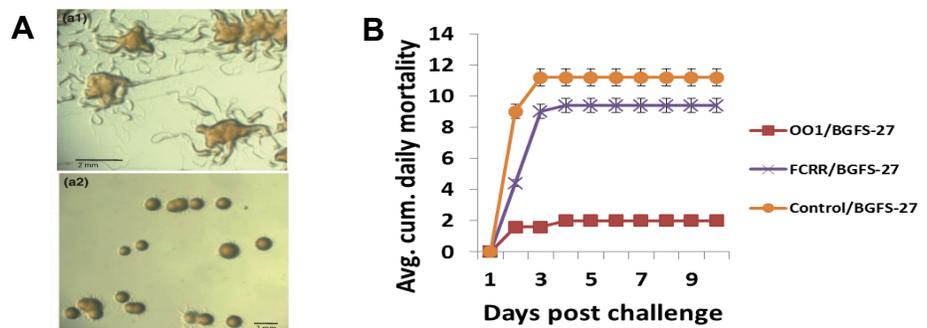
Flavobacterium columnare is the causative agent of columnaris disease and exists as two genomovar, or groups, with group I being moderately virulent and group II being highly virulent. The current vaccine for columnaris disease is based on a less virulent group I isolate. To generate a more effective vaccine, a highly virulent group II isolate was serially passaged to disable virulence but not immunogenicity. In vaccine trials of Nile tilapia and catfish, this vaccine increased survival rates by 66% and 17%, respectively, over the group I-based vaccine. Fish are vaccinated by brief immersion in tanks containing the vaccine and then transferred to a standard tank or pond. The vaccine strain remains stable after 60 passages and remains viable after storage at room temperature for up to a year.

Status

- Superior protection shown in catfish (fry and fingerling stages), tilapia, and zebrafish
- Issued US Patent [9,161,972](#); pending applications in Brazil & Vietnam
- Strain deposited at the CECT Culture Collection
- Ongoing studies for minimal effective dose and optimal revival conditions

Licensing Opportunities

- This technology is available for exclusive or non-exclusive licensing
- Joint development opportunities include funded research or a joint venture



Bacterial morphology and vaccine protection in tilapia. (A) Virulent *F. columnaris* strain (top) and passaged vaccine strain (bottom). (B) Average cumulative daily mortality after challenge with a virulent *F. columnaris* genomovar II pathogen (BGFS-27) in Nile tilapia. OO1 denotes fish vaccinated with the new genomovar II-based strain. FCRR denotes vaccination with the currently used genomovar I-based vaccine. Control is sham vaccination.