

AquaBooster UPM

Feed-Based Vaccine for Freshwater Fishes

PATENT NO. PI2022001807



AquaBooster feed-based vaccine



Infected by *Streptococcus* spp.



Infected by *Aeromonas* spp.

BRIEF TECHNOLOGY

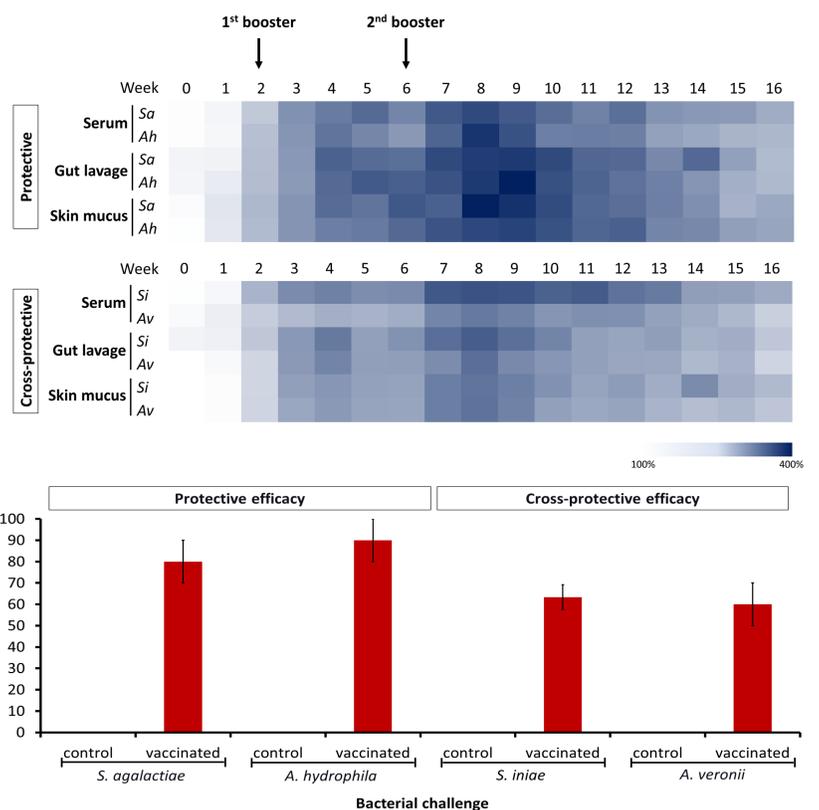
AquaBooster is a feed-based bivalent vaccine (oral vaccine) against streptococcosis and aeromoniasis diseases. Vaccines are more flexible, less stressful, and provide cost savings for both production and labor while improving overall outcomes.

CURRENT ISSUES

- Intensive aquaculture poses a potential risk for the outbreak of aquatic diseases, including streptococcosis (50% - 70% mortality rate) and aeromoniasis (>80% mortality rate), particularly in larger farms where infection risks tend to be higher, which cause a billion losses in aquaculture industry.
- The majority of existing vaccines are administered via injection, necessitating trained personnel for fish handling and entailing substantial costs and time consumption.
- Current vaccines for streptococcosis and aeromoniasis are monovalent and demonstrate efficacy solely against specific strains of *Streptococcus* and *Aeromonas* species, with no cross-protection capabilities.
- Some of the vaccines use expensive commercial adjuvants, which contributes to the high cost of vaccine production.

INVENTIVENESS & NOVELTY

- This vaccine offers robust protection against both streptococcosis and aeromoniasis, contributing to a remarkable average survival rate of 60 - 90% until the fish reach market weight.
- The vaccine uses palm oil as adjuvant. Locally abundance palm oil contains high level of vitamin E that is instrumental in enhancing the efficacy of this feed-based vaccine. The cheap palm oil will eventually result in cheaper vaccine.



AquaBooster feed-based vaccine was found to **enhance mucosal and systemic immunities** in red tilapia. The vaccine also **improved relative percentage survival (RPS)** in red tilapia through high protection against infections by *S. agalactiae* and *A. hydrophila* and partial cross-protections against *S. iniae* and *A. veronii*.

USEFULNESS & APPLICATION



- AquaBooster vaccine provides cross-protection against several species of pathogenic *Streptococcus* spp. and *Aeromonas* spp. that are found frequently in freshwater fish culture of many Asian countries.
- AquaBooster vaccine is recommended to be administered orally using our suggested regimen for better protection. This should solve the issues of using injectable vaccines faced by small to medium-holding farmers in Asia.

IMPACT OF THE PRODUCT

✓Easy to use ✓Cost-effective ✓Highly-effective ✓Improve disease prevention ✓Stimulate antibody production ✓Improve growth performance ✓Improve farms' production

MARKET POTENTIAL

- Aquaculture industry, specifically freshwater fish farming (small or commercialized) in Malaysia and other Asian countries

Technology Readiness Level (TRL)

5 - Validation in real environment



Project Leader : Assoc. Prof. Dr. Ina Salwany Md Yasin
 Dept./Faculty : Institute of Bioscience
 Email : salwany@upm.edu.my
 Phone : +60179262509
 Expertise : Aquaculture Biotechnology, Vaccine and Therapeutics

#UNSDG



www.sciencepark.upm.edu.my