

RESEARCH UPDATE

VACCINE AGAINST FISH VIBRIOSIS

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Aquaculture is one of the emerging industries due to the increasing protein demand worldwide. As aquaculture farms and hatcheries are mushrooming, more diseases are expected to surface. Of these diseases, vibriosis remains a major challenge in aquaculture.

Fish vibriosis frequently occurs in farms and hatcheries. Antibiotic is effective in controlling the disease but it poses harmful effects to human as well as to the environment. Moreover, extensive use of antibiotics causes bacterial pathogens to develop resistance.



Immersion vaccination is practical and poses no harm to aquaculturists

In view of the problems arising from the use of antibiotics, vaccination is seen the only hope for future prevention of vibriosis in Malaysia. In this study, BMRI embarked on the development of vaccine against the disease in Asian seabass. The study is funded by the Ministry of Agriculture & Agro-based Industry, Malaysia. The vaccine formulation was based on the formalin-killed *Vibrio harveyi* VHJR7. The formulation was delivered through various routes including injection (oil-based adjuvant and non-adjuvant) and immersion. The sera from experimental Asian seabass specimens were tested for agglutination capability and challenged with live bacterial pathogen. Results showed that sera drawn from a vaccinated fish specimen agglutinated strongly to the bacterial antigen, *Vibrio harveyi*, indicating that the vaccine has activated the humoral immunity of the fish. The results from bacterial challenge revealed that injection vaccination effectively (relative percentage survival; RPS > 80%) saved the fish from vibriosis. Similar finding was also observed in fish vaccinated through immersion (RPS > 87%). Although the injection vaccination prevents fish vibriosis in Asian seabass, delivery requires trained technicians, especially when large number of big-sized fish specimens are to be vaccinated. In addition, it can cause hand injuries during vaccination if fish is not handled with care.

Improvised technique of immersion vaccination resulted in high level of RPS. This vaccination method has several advantages over the injection since it does not require many technicians, can be applied to various sizes of fish and poses no injuries to technicians. It is likely to bring huge benefits to the aquaculture industry in Malaysia.