

The effect of feed-based vaccination on tilapia farm endemic for streptococcosis

ABSTRACT

A tilapia farm experiencing endemic streptococcosis was selected to study the effect of vaccination with a feed-based vaccine on naturally occurring streptococcosis. A total of 9000 red tilapia, *Oreochromis niloticus* × *Oreochromis mossambicus* of 100 ± 20 g were divided into 9 cages. Fish of Group 1 in cages 1, 2 and 3 were not vaccinated. Group 2 in cages 4, 5 and 6 were vaccinated on days 0 and 14 (single booster) while Group 3 in cages 7, 8 and 9 were vaccinated on days 0, 14 and 42 (double booster). Vaccination was done by oral administration of the feed-based bacterin vaccine at 4% bodyweight. Samples of serum for antibody study and the brain, eyes and kidney for bacterial isolation were collected at 14-day intervals. The study was carried out during the critical months between April and June. Following vaccination and booster, there was significant ($p < 0.05$) increase in the antibody levels in all vaccinated groups from week 1 that reached the peak at week 3 before declining gradually until week 6. However, second booster on week 6 significantly ($p < 0.05$) increased the antibody level that remained high until the end of the 16-week study period (double booster). *Streptococcus agalactiae* was isolated at the start of the experiment (day 0) at an average of $10 \pm 5.0\%$ of the sampled fish. In week 4, the isolation rate was $13 \pm 5.7\%$ but increased to $18 \pm 7.6\%$ in week 8, to $25 \pm 10.0\%$ in week 10, to $28 \pm 5.8\%$ in week 12 and $25 \pm 7.3\%$ in week 14. The average isolation rate was $28 \pm 7.2\%$, $18 \pm 7.1\%$ and $13 \pm 8.2\%$ of the fish sampled from unvaccinated, single booster and double booster groups, respectively. At the end of the study period, the survival rate was $45.2 \pm 2.45\%$ for unvaccinated, $65.3 \pm 4.8\%$ for single booster and $75.1 \pm 2.1\%$ for double booster groups. Vaccinating fish in endemic farm might not eliminate the disease but was able to significantly improve the survival rate.

Keyword: Efficacy; Feed-based vaccine; Streptococcosis; Endemic farm