

Evaluation of specific immunogenicity of *Aeromonas hydrophila* biofilm oral vaccine in common carp

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Abstract

One of the methods of protection and slow release of vaccine antigens is the use of biodegradable natural polymers such as chitin in the bacterial biofilm substrate. The bacterium is complex and protected by the polymer substrate in the conditions of the digestive system, and finally, healthier vaccine antigens with better immunogenicity are provided to the intestine mucosal immune system of the fish. In this method, biofilm vaccine of *Aeromonas hydrophila* bacteria was done by culturing the bacteria in TSB medium (0.225% W/V) along with chitin (0.3% W/V) for 4 days in a shaker incubator. Afterward bacteria were washed with sterile PBS and were inactivated by heat. A number of common carp of 32 ± 11 g were divided into 5 equal treatments and each treatment was repeated three times as follows: the first to fourth treatment with biofilm vaccine, bacterin, media chitin and chitin + TSB respectively, by oral method during 10 days were immunized; the fifth treatment without vaccine administration was considered as the control group. Sampling of fish serum was done on days 0, 20, 40 and 60. Antibacterial antibody level in the samples was evaluated by ELISA test and by monoclonal antibody. The results showed that the antibody level of *Aeromonas hydrophila* in oral biofilm treatment on day 20 was significant compared to the other treatments, but it was not significant on days of 40 and 60.

Key word: Oral vaccine, Biofilm, *Aeromonas hydrophila*, Common carp

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