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Efficacy of bath vaccination with a live attenuated *Vibrio* harveyi against vibriosis in Asian seabass fingerling, *Lates calcarifer*

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Abstract

Vibrio harveyi causes vibriosis in various marine aquaculture fish species, especially when they are young. The infection subsequently leads to significant economic losses for aquaculture farms. Vaccination is recommended to control this disease. This study describes the efficacy of a live attenuated *V. harveyi* strain MVh_vhs (LAVh) as a vaccine candidate in controlling infection by wild-type *V. harveyi* (WTVh) in *Lates calcarifer*. A total of 240 fingerlings were divided into four groups. Group 1 was not vaccinated and was not challenged, Group 2 was vaccinated with a formalin-killed *V. harveyi* (FKVh), Group 3 was vaccinated with the LAVh before challenge and Group 4 was not vaccinated and was challenged. Bath vaccination was employed for one hour before the LAVh distribution was determined in the fish mucus, gill, liver, gut, kidney and spleen. The gills, livers, kidneys and skins were also sampled for gene expression analysis. To challenge the fish, skin abrasion was conducted before the fish were challenged by immersion with WTVh. The results revealed an extensive distribution of the LAVh in the liver and kidneys of the fish in Group 3 for the first 12 hr, resulting in mild lesions compared with Group 1. Similarly, there were significantly ($p < .05$) higher expressions of the Chemokine ligand 4 and major histocompatibility complex I genes in the skin and liver of the fish in Group 3 in comparison with other groups. Vaccination with LAVh resulted in a significantly high rate of survival (68%) of the fingerlings after being challenged with WTVh.

Keywords

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