TESTING EXPERIMENTAL SUBUNIT FURUNCULOSIS VACCINES FOR RAINBOW TROUT

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ABSTRACT

Aeromonas salmonicida subsp. *salmonicida* (AS) is the etiological agent of typical furunculosis in salmonid fish. The disease causes bacterial septicemia and is a major fish health problem in salmonid aquaculture worldwide, inducing high morbidity and mortality. In this study we vaccinated rainbow trout with subunit vaccines containing protein antigens that were selected based on an *in silico* antigen discovery approach. Thus, the proteome of AS strain A449 was analyzed by an antigen discovery platform and its proteins consequently ranked by their predicted ability to evoke protective immune response against AS. Fourteen proteins were prepared in 3 different experimental subunit vaccine combinations and used to vaccinate rainbow trout by intraperitoneal (i.p.) injection. We tested the proteins for their ability to elicit antibody production and protection. Thus, fish were exposed to virulent AS 7 weeks post-vaccination by applying a novel, multi-puncture challenge method. The immune response in fish was evaluated following vaccination and challenge by measuring antibody levels and recording survival. The control group showed 56 % mortality whereas the groups of fish vaccinated with experimental subunit vaccines exhibited significantly lower mortalities (17-30 %). These results imply that *in silico*-predicted protective protein antigens of AS have significant protective properties and should be considered for further validation as potential candidates for a subunit vaccine against furunculosis.

KEYWORDS

Furunculosis, subunit vaccines, rainbow trout, *Aeromonas salmonicida,* challenge

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