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Immunization of Rainbow Trout (*Oncorhynchus mykiss*) against *Lactococcus garvieae* Using Vaccine Mixtures

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Abstract

The effectiveness of vaccine mixtures against lactococcosis was tested in rainbow trout (*Oncorhynchus mykiss*). The M_1 strain of *Lactococcus garvieae*, isolated from a recent outbreak of lactococcosis at a rainbow trout farm in Turkey, was used in a trial comparing five immunization treatments: (a) formalin inactivated bacterin (vaccine), (b) the above bacterin together with Freund's Incomplete Adjuvant (FIA), (c) the bacterin combined with β-glucan, (d) β-glucan only, and (e) phosphate buffered saline-PBS (control). Fish were given intrapritoneal injections and challenged by exposure to the bacteria 30, 75, or 125 days after vaccination. In fish exposed to the bacteria 30 days after injection, the relative percent survival (RPS) was 88.89% in the group that received only bacterin and 100% in the group that received the bacterin combined with FIA. Immunity remained high in the bacterin+FIA group, as the RPS in this group remained 100% in fish challenged at 75 days, significantly higher than in all other groups. In fish exposed to the bacteria 125 days after vaccination, the RPS was 54.55% in fish vaccinated with the bacterin only and 84.84% in fish vaccinated with bacterin+FIA. In the group that received only β-glucan, immunity did not improve after vaccination. Micro-agglutination tests of serums showed that immunized fish produced antibodies at high titers within 30 days. In short, the formalin-inactivated M_1 strain provided longer lasting protection against *Lactococcus garvieae* in rainbow trout when combined with FIA than when administered alone or with β-glucan.

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