

## **Prebiotics and Essential Oils-Enriched Diet Can Increase the Efficiency of Vaccine against Furunculosis in Rainbow Trout (*Oncorhynchus Mykiss*)**

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**Abstract :** Furunculosis caused by infection with *Aeromonas salmonicida* subsp. *salmonicida* has been a known disease found principally in salmonid aquaculture. Vaccination has been partly successful in preventing this disease, but outbreaks still occur. The application of functional feed additive found to be a promising yield to improve fish health against diseases. In this study, we tested the efficacy of prebiotics and plant essential oils-enriched diet on immune response and disease resistance in vaccinated and non-vaccinated rainbow trout (*Oncorhynchus mykiss*) against furunculosis. A total of 600 fish were fed with the basal diet or supplement. On 4th week of feeding, fish were vaccinated with an autovaccine. Following 8 weeks, fish were challenged with *Aeromonas salmonicida* subsp. *salmonicida* and mortalities were recorded for 3 weeks. Lysozyme activity and antibody titer in serum were measured in different groups. The results of this study showed that lysozyme and circulatory antibody titer in plasma elevated significantly in vaccinated fish fed with additive. The best growth rate and relative percentage survival (62%) were in fish fed with a supplement, while 15% in control fish. Overall, prebiotics and essential oils association can be considered as a potential component for enhancing vaccine efficacy against furunculosis by increasing the growth performance, immune responses and disease resistance in rainbow trout.

**Keywords :** *aeromonas salmonicida* subsp. *salmonicida*, aquaculture, disease resistance, fish, immune response, prebiotics-essential oils feed additive, rainbow trout, vaccination

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