Effects of Feed Supplemented with *Lentinula edodes* Mushroom Extract on The Immune Response of Rainbow Trout, *Oncorhynchus mykiss,* and Disease Resistance Against *Lactococcus garvieae*

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Abstract

This research was conducted to determine the effects of *Lentinula edodes (L. edodes)* medicinal mushroom extract as a trout feed supplement on the immune response and disease resistance against *Lactococcus garvieae* in rainbow trout (*Oncorhynchus mykiss*). For this purpose, the fish were fed with 1% and 2% *L. edodes* mushroom extract supplemented diet for six weeks. During the trial, blood samples were taken from 10 fish/group each week up to 6 weeks. Furthermore, at the end of the trail, fish were challenged with *L. garvieae* pathogen by intraperitoneal injection. Upon the evaluation of the results, feeding the rainbow trout with mushroom extract supplemented diet showed a significant influence on immunological parameters. The parameters were found to be higher in fish fed with experimental diet than the control group. Statistically significant levels of serum total immunoglobulin were detected only in the fish group fed with 2% *L. edodes* mushroom extract supplemented diet. The maximum influence on immune response occurred in rainbow trout fed with 2% *L. edodes* extract. As a result of the challenge test, the survival rate was found to be the highest in the 2% *L. edodes* supplemented feeding group. The results suggested that fish fed with *L. edodes* mushroom extract supplemented diet enhanced the immune response of fish and decreased the mortality rate in rainbow trout against *L. garvieae.*

Keywords: *Oncorhynchus mykiss*, *Lentinula edodes*, mushroom extract, immune system, *Lactococcus garvieae*.

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