Effects of dietary cineole administration on growth performance, hematological and biochemical parameters of rainbow trout (Oncorhynchus mykiss)

Seyyed Morteza Hoseini, Ali Taheri Mirghaed, Yousef Iri, Melika Ghelichpour

PII: S0044-8486(18)30720-8
DOI: doi:10.1016/j.aquaculture.2018.06.073
Reference: AQUA 633358

To appear in: *aquaculture*

Received date: 10 April 2018
Revised date: 19 May 2018
Accepted date: 25 June 2018

Please cite this article as: Seyyed Morteza Hoseini, Ali Taheri Mirghaed, Yousef Iri, Melika Ghelichpour , Effects of dietary cineole administration on growth performance, hematological and biochemical parameters of rainbow trout (Oncorhynchus mykiss). Aqua (2018), doi:10.1016/j.aquaculture.2018.06.073

Effects of dietary cineole administration on growth performance, hematological and biochemical parameters of rainbow trout (*Oncorhynchus mykiss*)

Seyyed Morteza Hoseini[1*], Ali Taheri Mirghaed[2**], Yousef Iri[1], Melika Ghelichpour[2]

Inland Waters Aquatic Stocks Research Center, Iranian Fisheries Science Research Institute, Agricultural Research, Education and Extension Organization, Gorgan, Iran

Department of Aquatic Animal Health, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran

*Correspondence: Tel.: +989112750713, POB: 1419963111; Fax: +981732240290. E-mail address: seyyedmorteza.hoseini@gmail.com

**Correspondence: Phone: +989121952440; Fax: +982166409348; POB: 1419963111; Email: mirghaed@ut.ac.ir

Abstract

The aim of this study was to investigate the effects of dietary 1,8-cineole (cineole) administration on rainbow trout growth performance and health. The fish were fed with cineole supplemented diets [0 (control), 0.01, 0.1, 0.25, 0.5 and 1%] for 50 days. Thereafter, the fish growth performance, survival rate and proximate composition, blood RBC, hemoglobin (Hb) and hematocrit (Hct) levels, levels of serum total protein, albumin, globulin, triglyceride and cholesterol, and activity of serum aspartate aminotransferase (AST) and alkaline phosphatase (ALP) were investigated. The results showed that the fish growth performance increased along with increase in dietary cineole levels up to 1%. The cineole treated fish had 100% survival; whereas the control survival rate was 88.9%. The cineole-treated fish had significantly higher serum total protein and globulin compared to the control group. Cineole at 0.25-1% levels significantly increased blood RBC, Hb and Hct levels, and decreased serum triglyceride level and AST and ALP activities compared to the control group. Serum cholesterol levels showed significant decrease at the cineole levels of 0.5 and 1% compared to the other treatments. In conclusion, the results suggest that dietary cineole is capable to stimulate trout immune function and mitigate hemolysis and serum lipid levels. Such health benefits may explain the improved fish growth performance and survival rate. According to the results, dietary cineole supplementation at 0.86-0.90% would be beneficial in rainbow trout.

Keywords: 1,8-cineole, growth, health, hematology, serology