DOI: 10.22055/ivj.2019.173120.2121

Study the effects of administrating zeolite/chitosan and zeolite/nano chitosan composites in rainbow trout (*Oncorhynchus mykiss*) diet on the quality of the frozen fillet

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Received: 25.02.2019 Accepted: 05.10.2019

Abstract

In recent years, the use of natural substances in nanoparticle forms in the aquatic animal diet is routine to improve the growth performance, immune system, disease resistance and fillet quality. In this study for the first time, the effects of zeolite/chitosan and zeolite/nanochitosan composites in rainbow trout diet on fillet quality were evaluated. Therefore, six treatment diets including zeolite/chitosan and zeolite/nanochitosan composites were prepared as follows: control group (without any additives), Z group (with 14.28 g kg^{-1} zeolite), Ch0.5% group (with 0.5 g kg^{-1} chitosan loaded in 14.28 g kg^{-1} zeolite), Ch5% group (with 5 g kg^{-1} chitosan loaded in 14.28 g kg^{-1} zeolite), NCh0.5% group (with 0.5 g kg^{-1} nanochitosan loaded in 14.28 g kg^{-1} zeolite) and NCh5% group (with 5 g kg^{-1} nanochitosan loaded in 14.28 g kg^{-1} zeolite). Prepared diets were fed to rainbow trout with a mean weight 50 g for 60 days. On day 60, fish were weighed, and growth parameters were evaluated. Then, microbiological and chemical parameters during three months period in freezing storage temperature (-18) were studied. Results showed that growth performance was enhanced in all treatment groups, but bacterial growth did not change by experimental diets. Meanwhile, lipid peroxidation product and peroxide value significantly decrease in fish fillet administrated with NCh5% diet. This study showed that the administration of zeolit/nanochitosan composite at 5g/kg to rainbow trout diet could improve the fish fillet in terms of chemical characteristics.

Keywords: Rainbow trout, Fillet, Composite, Zeolit, Nanochitosan

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