

THE EFFECT OF YARROW (*ACHILLEA MILLEFOLIUM*) SUPPLEMENTED DIET ON GROWTH PERFORMANCE, BIOCHEMICAL BLOOD PARAMETERS AND MEAT QUALITY OF RAINBOW TROUT (*ONCORHYNCHUS MYKISS* W.) AND GROWTH OF LETTUCE (*LACTUCA SATIVA*) CULTIVATED IN AQUAPONIC RECIRCULATION SYSTEM

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Abstract

Yarrow (*Achillea millefolium*) is medicinal plant used in Bulgarian traditional medicine to improve the condition of the digestive tract and could positively affect digestibility and assimilation of feed nutrients, as well as physiological condition in human and animal organisms. The aim of current study was to find the effect of feed, supplemented with yarrow (*Achillea millefolium*) on growth performance, blood parameters and meat quality in rainbow trout (*Oncorhynchus mykiss* W.) as well as on growth of heads and roots in lettuce (*Lactuca sativa*), raised in the aquaponics recirculation system.

The fish were fed with two feeds: control feed (CF) - without the addition of supplement and experimental feed (EF), with supplementation of the extract of yarrow in quantity of 15 g/kg of feed fed. The initial average weight of fish in CF variant was 114.4 ± 2.72 g and in EF variant was 109.8 ± 2.10 g without differences being statistically significant ($P \geq 0.05$). The continuation of the experiment was 60 days. The average final weight, meat quality, and blood biochemical parameters were measured at the end of the experiment. The blood samples were examined by the colorimetric method with blood analyzer (Mindray SC – 120). The meat quality (moisture %, dry matter %), crude protein content, fat and ash content were determined respectively to Bulgarian State Standards: (BSS)11374-86, BSS-ISO 5983, BSS-ISO 6492, BSS 11374-86). The data were analyzed statistically with Anova single factor Statistica 6.0 software.

The average final weight in trout from the experimental group was higher with 11.0%, compared with the value of this parameter, found for the rainbow trout from the control variant ($P < 0.001$). The aspartate aminotransferase, alkaline phosphatase and cholesterol levels in the blood of fish fed with feed supplemented with yarrow were higher, respectively with 27.4%, 57.2%, and 24.9%, compared with average values in these blood parameters found out for fish from control variant ($P < 0.05$). The parameters of meat quality in fish from experimental groups were not affected significantly from yarrow supplementation in fish feed and were similar to those found in fish from the control group ($P \geq 0.05$). The weight of head and roots in lettuce cultivated in the aquaponics system were respectively 95.4 ± 3.06 g and 26.9 ± 0.82 g at the end of the trial.

The supplemented diet with yarrow affects the growth and biochemical blood parameters (aspartate aminotransferase, alkaline phosphatase and cholesterol) in rainbow trout and did not affect the weight of head and roots in lettuce cultivated in the aquaponics system.

Key words: Aquaponics recirculation system, Yarrow supplementation, Rainbow trout, Blood biochemical parameters, Growth, Meat quality.