



Ozone efficiency on water quality enhancement in an intensive rainbow trout (*Oncorhynchus mykiss*) culture system

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Abstract:

Intensive aquaculture reduces water quality in ponds, which can lead to stressful condition for aquatic spaces that may be cause some diseases. Different systems have been developed for intensive aquaculture. Using ozone as a potent oxidant agent would lead to convert ammonia and nitrite to nitrate and decrease in water turbidity, which improves water quality for cultivated species that improve growth factors. The present study was conducted based on a control (without ozone injection) and three ozonation levels (100-120, 250-300, 450-500 and 550-600 mV) three times per day, each time 3 hours after feeding with 6% exchange of total water volume. 20 juveniles of rainbow trout, *O. mykiss*, (17.2 ± 2 g) were randomly stocked to experimental tanks. Measurement of the water quality parameters and biometry of fish were down during study period. Ozone injection resulted in increasing and decreasing on nitrate and nitrite concentrations, respectively ($p < 0.01$). However, ozone in all treatments did not significantly affect the total ammonia and total phosphorus concentrations ($p < 0.05$). Food conversion factor (FCR) decreased with increasing ozone level ($p < 0.05$). With increasing ozone levels, the condition factor and specific growth rate significantly increased ($p < 0.05$). In general, the results indicate improved water quality factors, which reduced the food conversion ratio and improved the condition factor (CF) and the specific growth rate (SGR). According to the results and previous studies, intensive aquaculture systems can be designed with fewer risks in cultivation period.

Key words: Intensive culture; Rainbow trout; Water quality; Ozone; Growth factors.