

Study on Physiological Responses of Silver Carp (*Hypophthalmichthys molitrix*) Exposed to the Anionic Detergents

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Abstract

Anionic detergents have the highest consumption among the detergents and are one of the pollutants of aquatic systems. In the present study, the effects of these detergents on hematological parameters of *Hypophthalmichthys molitrix* were investigated. For this purpose, three treatments containing anionic detergent concentrations of 0.5, 1 and 1.5 ppm and also one control treatment (no detergent) was considered. The fish were exposed to this material for two weeks. Blood samples from the caudal fin vein (with a 2 cc syringe) were taken. Blood samples were used to determine hematocrit, hemoglobin, red and white blood cell count and MCV, MCH and MCHC indices. According to the result, the values obtained by measuring the levels of hematocrit, hemoglobin and white blood cell count decreased significantly compared to the control treatment ($P < 0.05$). But the number of red blood cells, unlike other blood parameters in the control treatment was lower than the other treatments ($P < 0.05$) and the highest amount was observed in the 0.5 ppm treatment ($P < 0.05$). The highest and lowest levels of MCV and MCH indices were measured in control and 0.5 ppm treatment, respectively ($P < 0.05$). The MCHC index did not show significant differences among the treatments ($P > 0.05$). In general, it seems that even low concentrations of anionic detergents can make important changes in hematological parameters, hematopoiesis processes, and even non-specific immune system of silver carp. Therefore, the high consumption of detergents and their entrance into the aquatic systems can lead to failures in reproduction and breeding of this commercial species.

Keywords: Anionic detergents, Hematology, Blood indices, *Hypophthalmichthys molitrix*.
