Abstract

Diclofenac is an anti-inflammatory and non-steroidal drug that used as a palliative, and it can accumulate in living organisms, and in the long term, cause acute toxicity. Diclofenac causes oxidative stress, which can have a negative effect on aquatic organisms. The aim of the present study was to investigate the effects of diclofenac on blood parameters and oxidative stress status of *Cyprinus carpio*. An experiment was conducted in the summer of 2019 at the fisheries reproduction and recovery center of Zahak on 150 pieces of *C.carpio* fingerling for 28 days, as a control treatment, and 4 experimental treatments: Different levels of diclofenac (2/5, 5, 7/5 and 10 mg/L) with 3 replicates per treatment. At the end of the study, blood samples were taken from the tail vein of fish to measure the antioxidant enzyme activity of the liver and blood parameters. Also for tissue damage at the end of the period from liver, kidney, gill, intestine and brain of fish were sampled.According to the results, diclofenac caused disturbance in liver enzymes and antioxidant, blood parameters as well as changes in different tissues of *C. carpio*.Antioxidant enzymes increased compared to controls. The highest of enzyme CAT (72±12), GPX (67/138±50/27) and GR (67/116±50/21) enzymes were detected in the group of 5/7 mg/L diclofenac that to the control group had a significant difference (p≤05/0). The highest activity of enzyme AST (119±2) and LDH (67/1187±50/8) was observed in group of 5 mg/L diclofenac. As diclofenac increased, red blood cells decreased, but white blood cells and hematocrit, MCH and MCHC increased. The highest levels of MCH (29/2±04/0) and MCHC (11/199±73/6) were observed in the group of 10 mg/L diclofenac, which was significantly different from the control group (p≤05/0). In the tissues of kidney, liver, brain and gill of the fish, except the intestinal tissue, exposed to high doses of diclofenac, little damage was observed. It can be stated that *C. carpio* is sensitive to the diclofenac drug contaminant and the greatest effect is seen at high doses.

Keywords: Diclofenac, Oxidative stress, *Cyprinus carpio*, Blood parameters

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Effects of diclofenac on blood parameters and oxidative stress status of Common carp (*Cyprinus carpio*)

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