

EFFECTS OF CARBOSULFAN ON SOME ENZYME ACTIVITIES IN BLOOD OF RAINBOW TROUT (*ONCORHYNCHUS MYKISS*)

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DELOVANJE KARBOSULFANA NA AKTIVNOSTI NEKIH ENZIMA U KRVI KALIFORNIJSKE PASTRMKE (*ONCORHYNCHUS MYKISS*)

Abstract

Detection of changes in enzyme activities is widely used as a quick method to determine the toxic effects of pesticides or other toxic chemicals. In this study, chronic toxic effects of carbamate insecticide carbosulfan (250 g/L, EC) used commonly in agriculture areas as well as in Eastern Black Sea Region on blood enzyme activity of rainbow trout (*Oncorhynchus mykiss*) were determined. For this purpose, rainbow trout (116.88±21.69 gr and 22.39±1.40 cm) acclimated to the laboratory conditions were exposed to carbosulfan within 60 days in flow-through system (6 l/h). According to preliminary tests, carbosulfan concentration of test water was designed to be 35 µg/l. During the chronic tests, erythrocyte acetylcholinesterase (AChE), erythrocyte δ-aminolevulinic acid dehydratase (ALA-D) and paraoxonase (PON) activities of rainbow trout were measured and inhibition rate of enzyme activities were determined. Changes in enzyme activities of rainbow trout were significant ($p < 0.001$). While increase of inhibition rates on AChE and PON activities lasted up to the 3rd week, δ-ALA-D activity lasted up to 4th week. Inhibition rates of AChE, PON and δ-ALA-D activities were determined as 41.32%, 16.67% and 26.24%, respectively and it was determined that change of enzyme activity affected fish behavior. Feed conversion ratio (FCR) was influenced from these behavior disorders during the experiment. Fish exposed to toxic carbosulfan had a 2% weight gain in the 60th day while the control group had a weight gain of 26%.

Keywords : AChE, δ-ALA-D, PON, *Oncorhynchus mykiss*