

Abstract

Biomarkers, are early warning systems for aquatic organisms exposed to pollutants. Among these, measuring of Cholinesterase enzymes activity specially Acetylcholinesterase of fish tissues, is a marker for exposure to organophosphate pesticide and carbamates, and this biomarker has been used in different studies (inland and sea ecosystems). In this study, 236 specimens of *Barbus lacerta* (Cyprinidae) were caught from stations from Sefidroud River basin during eight months (December and March, 2011 and April to September 2012) and were sampled liver, muscle and brain tissues. Physicochemical parameters of water, Length, weight and age of fishes furthermore, special activity of acetylcholinesterase has been measured, and were expressed via statistical relation between them by Principal Component Analysis (PCA). Results indicated that enzyme levels of brain samples between station 1 and 3, had significant differences at months of August and September ($p > 0.05$) and no difference in the muscle and liver tissue during the other of months ($p < 0.05$). Also correlations between environmental, biological and enzymical parameters showed that during this study, there are positive correlations between dissolved oxygen (DO) and enzymical parameters.

Key words: Biomarkers, Acetylcholinesterase, *Barbus lacerta*, Organophosphate pesticides, Sefidroud River, Principal Component Analysis (PCA).



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**Cholinesterases activity evaluation in
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biomarker affected by organophosphate
pesticides in the Sefidrud River**

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