Clomazone herbicide affects the survival and cholinesterase activity in (common carp) *Cyprinus carpio*

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The experiments were carried out to verify the effects of survival and acetylcholinesterase activity (AChE) in common carp (*Cyprinus carpio*) exposed to the commercial herbicide clomazone. Fish (8.3 ± 0.5 g, 10.0 ± 0.8 cm) were exposed to (0, 10, 20, 30, 40 and 50 mg/L) of the herbicide for 96 hours. Mortality from each concentration of herbicide was recorded for estimation of LC₅₀. Dead fish were removed to collect muscle and brain and these tissues were also sampled from surviving fish at the end of the experiment (96 hours) to determination of the AChE (EC 3.1.1.7) activity.

The mean LC₅₀-96h of clomazone for common carp was 30.35 mg/L (confidence interval 23.00–37.00 mg/L). It was observed that like the concentration of the herbicide increased fish mortality also increased. The AChE activity showed increased in the muscle fish dead after exposure to 50 mg/L (260.1%). An increase of AChE activity was also observed in the muscle of fish that survived the exposure of 10, 20 and 30 mg/L of clomazone (143.7, 137.1 and 138.4%, respectively). However, the brain AChE activity for survive fish was inhibited at 10, 20 and 30 mg/L (44.3, 42.7 and 35.5%, respectively). The common carp presented highest values to CL₅₀-96h indicating some tolerance of carp for clomazone. Concerning AChE activity the results showed in brain of survive fish are in agreement with similar studies with different fish species and the same herbicide. This enzyme may be used to monitor clomazone toxicity in common carp.

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