Effect of Roundup 41% (glyphosate) on blood serum biochemical parameters of freshwater fish, Rasbora daniconius

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ABSTRACT

Aim:

The present study was carried out to investigate the impact of Roundup 41% (glyphosate) on serum enzymes, like aminotransferases activity (ALT and AST), alkaline phosphates (ALP), total protein and glucose of fresh water fish, Rasbora daniconius.

Methodology:

LC50 of glyphosate for R. daniconius was calculated by static bioassays and recorded as 5.6 ppm at 96 hr. The fish were exposed to sub-lethal concentration (1/10th 96 hr LC50) of glyphosate for a period of 7, 14, 21 and 28 days. The serum ALT, AST, ALP, glucose and total protein were determined by standard methods.

Results:

Statistically important differences were observed in alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), total protein and glucose levles. ALT, AST and ALP values were significantly higher ($p<0.05$) in treated group, compared with the control group. There was also a significant increase ($p<0.05$) in the level of serum glucose while the reduced amount of protein content as compared to control fish.

Interpretation:

Increased metabolic enzymes, protein metabolism and hyperglycemia in the serum may be a possible indicator of liver damage caused by Roundup 41% (glyphosate) exposure in fish, Rasbora daniconius.

Aminotransferases activity; Glyphosate; Rasbora daniconius; Roundup 41%; Serum enzymes; Toxicity

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