Toxic Influence of Cypermethrin on Biochemical Changes in Fresh Water Fish, Cyprinus carpio

Authors : Gowri Balaji, Muthusamy Nachiyappan, Ramalingam Venugopal

Abstract : Amongst the wide spectrum of pesticides, pyrethroids are preferably used rather than organochlorine, organophosphorous and carbamates pesticides due to their high effectiveness. Synthetic pyrethroids which are the chemicals used for the pest control in agriculture are now being excessively used in India. The aim of the present study was to evaluate the adverse effect of cypermethrin on the fresh water fish Cyprinus carpio, the common carp. The effect was assessed by comparing the biochemical parameters in the blood and liver tissues of control fishes with three experimental group of fishes exposed with cypermethrin for 7 days 1/15 Lc50 (E1) 1/10 Lc50 (E2) and 1/5 Lc50 values (E3). After 7 days of exposure, blood was collected and liver and gills was dissected out. The activities of acid phosphatase, alkaline phosphatase, lactate dehydrogenase, aspartate aminotransferase and alanine aminotransferase were estimated by standard spectrophotometric techniques in the blood, liver and gills tissue homogenate. Lactate dehydrogenase was significantly decreased in E2 and E3 experimental groups. The activities of acid phosphatase, alkaline phosphatase, aspartate aminotransferase and alanine aminotransferase were significantly altered in the experimental groups. All the biochemical parameters studied were adversely affected in the liver and gills of cypermethrin exposed fish. The results obtained from the present study of cypermethrin exposed fishes indicate a marked toxic effect of cypermethrin and also its dose dependent impact on different organs of the fish.

Keywords : cypermethrin, Cyprinus carpio, ALT, AST, LDH, liver, gills
Conference Title : ICT 2014 : International Conference on Toxicology
Conference Location : London, United Kingdom
Conference Dates : September 26-27, 2014