



COMBINATORY EFFECTS OF THE MIXTURES OF DIFLUBENZURON AND p-CHLOROANILINE IN TILAPIA AND ANALYSIS OF BIOINDICATORS

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Introduction and Objectives. Several chemicals occur together in the environment as a result of different sources. However, in the great majority of risk assessments only a single chemical has been considered. Diflubenzuron (DFB), the most used compound to combat parasites in aquaculture, can be toxic for non-target species. When degraded, it generates p-chloroaniline (PCA), a potentially carcinogenic and mutagenic compound. This work analyzed the combinatory effects of mixtures of diflubenzuron and p-chloroaniline in Tilapia fish and alterations on phosphatases and catalase activities. **Material and Methods.** The median lethal concentrations (CL50-96h) were obtained and isobolograms performed from these results were used to analyze the combinatory effects of the two compounds. The enzyme activities of alkaline (ALP), acid (ACP) phosphatases and catalase (CAT) extracted from gill of tilapia were measured by spectrophotometry. **Results and Discussion.** The isobolograms demonstrated synergistic, additive and antagonistic effects for the mixtures containing 75%, 50% and 25% PCA, respectively. DFB and PCA, when analyzed separately promoted different alterations on the enzyme activities. The mixture (1.5 mg/L) containing 75% PCA caused increases of 123% and 78% for ACP and CAT, respectively and a decrease of 62% for ALP. For the mixture (0.8 mg/L) containing 50% PCA it was observed an increase of 147% for ALP and a decrease of 43% for CAT. For the mixture (2 mg/L) containing 25% PCA an increase of 47% was obtained for CAT. Our results suggest that all the enzymes studied could be used as biomarkers of water pollution resources for DFB and PCA.

Key Words: Diflubenzuron, p-Chloroaniline, Enzyme biomarkers

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