Genotoxic effect induced by arsenic and chromium in peripheral erythrocytes of zebrafish

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Arsenic and chromium are very common environmental pollutants due to their extensive industrial use and their presence in the environment naturally. These compounds are usually at concentrations that can cause adverse effects to biota, ecosystem and humans. The purpose of this study was to evaluate the genotoxic effect induced by exposure to different concentrations of arsenic and chromium salts, through the analysis of the frequency of micronuclei (nuclear abnormalities) in peripheral zebrafish (*Danio rerio*) erythrocytes. Experimental organisms were exposed under laboratory conditions to nominal solutions of arsenic salts ($NaAsO_2$) (0.0031-0.0500 mg L^{-1}) and chromium ($K_2Cr_2O_7$) (0.065-0.22 mg L^{-1}) for 48 hours, through the toxicity curve of arsenic and chromium. The probit test was used to establish the mean lethal concentration (LC_{50}), and from this, three subtoxic concentrations (LC_{25}, $LC_{12.5}$ and $LC_{6.25}$) were selected to evaluate the genotoxic effect of both metals on peripheral blood erythrocytes of zebrafish. The results showed that both sodium arsenite and potassium dichromate were statistically positive in the genotoxicity test, with an increase in the frequency of micronucleated erythrocytes compared to the test concentrations, evidence of genotoxic damage to both metals. This study shows that arsenic and chromium can induce DNA damage in peripheral blood erythrocytes of zebrafish, demonstrating the ability of the bioassay used, as well as the bioindicator to detect damage in genotoxic studies.