Evaluation of the Genotoxicity of Digoxin.

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Digoxin is a drug used to treat congestive cardiac insufficiency. Despite the use of this drug in long-term treatments, there is no information concerning genetic risks associate with this exposure. In present study, CHO-K1 cells were used to assess the genotoxicity of digoxin employing the Comet assay and the Micronucleus assay. To select the concentrations to be tested in genotoxicity assays the MTT colorimetric assay was employed. This test was performed in CHO-K1 cells treated with different concentrations of digoxin (2.5, 5, 7.5, 10, 12.5, 15, 20, 25, 37.5 e 50 µM, in 6 replicates) after 24 and 48 hours of exposition. The Comet Assay and the Micronucleus Assay were realized with three no cytotoxic concentrations of digoxin (20, 35 and 50 µM, in 3 replicates) after 3 hours of exposition. Three independent experiments were realized to each evaluation. For statistical analysis was realized ANOVA followed by Tukey test. MTT results show that digoxin did not affect cell viability in concentrations assessed. However, digoxin was genotoxic in Comet assay, which was based on higher concentrations tested on MTT assay. Complementarily, digoxin was not mutagenic in micronucleus assay. Results presented herein show that high concentrations of digoxin induced DNA breaks. Nevertheless, these damages can be efficiently repaired by the cells, as observed in results on micronucleus assay, which permit to identify the fixation of chromosomal mutations after one complete cell cycle. Complementary studies are necessary to assess the DNA repair dynamic in cells treated with this drug.

Word Keys: Digoxin, Comet Assay, Micronucleus Assay

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