OXIDATIVE STRESS INDUCES CELL DEATH AND DNA DAMAGE IN MAMMALIAN CELL LINES

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Singlet oxygen ($^1O_2$) is normally produced by aerobic cells during cellular metabolism. At excessive amounts, $^1O_2$ and other reactive oxygen species show carcinogenic and toxic effects due to oxidation of biomolecules, such as lipids, proteins and nucleic acids. This can result in cell death or mutations if there are not efficient mechanisms of repair. $^1O_2$ has been known as one of main agent involved in oxidative stress and related to apoptosis and also cancer. The exposure of some pigments, such as methylene blue (MB) and riboflavine (RF), to the light is able to generate $^1O_2$ and other oxygen species as superoxide and peroxide. The aim of this study was to evaluate the genotoxicity of three different oxidative sources, H_2O_2, MB and RF in three mammalian cell lines, HeLa, CHOK1 and CHO9. Cell death was observed in all treatment but the sensibility was variable in function of the agent and the cell line. CHO9 was the more resistant cell line and HeLa and CHOk1 were more sensitive mainly to MB treatment. Both cell lines also presented DNA damage and apoptotic evidences when treated with MB and analyzed through comet assay.

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