VITAMIN C MODULATES DNA-DAMAGING EFFECT OF HYDROGEN PEROXIDE IN THE HUMAN COLORECTAL ADENOCARCINOMA CELL LINES (HT29) EVALUATED BY COMET ASSAY *in vitro*

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Experiments on cell lines *in vitro* indicate that vitamin C at low concentrations acts as an antioxidant and decreases the number of damages to genetic material, at high concentrations, however, and additionally in presence of transition metals ions, the compound shows a prooxidative potential. In this study we investigated the effect of vitamin C on hydrogen peroxide-induced DNA damage in the human colorectal adenocarcinoma cell lines HT29 *in vitro*. We used single-cell gel electrophoresis (the comet assay) to detect DNA damage. To test susceptibility and efficacy of the repair we checked ability of vitamin C to modulate DNA-damaging effect exerted by H_2O_2 in the human colorectal adenocarcinoma cell lines (HT29) *in vitro*. To evaluate oxidatively modified DNA bases, we applied a repair enzyme: formamidopyrimidine-DNA glycosylase (Fpg). Experiments in this study prove that vitamin C in lower range of concentrations (10–25 µM) shows antioxidative activity, but higher concentrations of vitamin C have a prooxidative effect on H_2O_2-induced DNA damages in HT29 cells *in vitro*. Cells exposed to both compounds were able to realize an effective repair of the damaged DNA within 120 minutes after the end of incubation with the tested compounds. HT29 cells exposed to activity of the Fpg enzyme recognising oxidative DNA damages, showed higher level of DNA damages comparing to control cells. As expected, the damages were mainly of oxidative character.