

BISPHENOL A INFLUENCE ON THE MITOTIC ACTIVITY IN THE HUMAN CELL LINES OF DIFFERENT ORIGIN

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Bisphenol A (BPA) is a xenoestrogen that has genetic and epigenetic toxicity. The mechanisms by which BPA has a negative effect on the body remains open. In this work, a comparative analysis of the effect of four BPA doses (0.25, 0.5, 1, 10 μM) on the mitotic activity of human cell lines of different origin (HEK293, HepG2, IMR32, FetMSC) was performed. The mitotic activity changes were detected in HEK293, HepG2 and IMR32 lines, where depending on cell type, dose, and duration of exposure to BPA we observed the increase or decrease of mitotic index (MI), or no effect of BPA on proliferation. At the same time the embryonic marrow mesenchymal stem cells (FetMSC line) were more resistant to the effects of the studied BPA doses, where there were no changes in MI compared to the control. This result may indicate the existence in the embryonic stem cells of additional (possibly epigenomic) protective mechanisms involved in cell cycle regulation, whereas in the cells of tumor origin such a mechanism appears to be damaged or less resistant to the action of xenoestrogens.

Keywords: ecotoxicants, xenoestrogens, cell proliferation, epigenomic modifications, DNA methylation, chromatin compaction