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COMPARATIVE CYTOGENETIC ANALYSIS OF THE PROGENY HUMAN ENDOMETRIAL MESENCHYMAL STEM CELLS IN CULTURE AFTER HEAT SHOCK AND X-RAY IRRADIATION

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The aim of this study was to investigate the cytogenetic assay of endometrial mesenchymal stem cells (eMSC) *in vitro* after the exposure to a sublethal dose of X-rays and the sublethal heat shock (HS). For the analysis of chromosomes, we used the G-banding technique. We showed that both types of stress caused similar changes in eMSC karyotype structure. In both cases, 80 % of the cell population had karyotype abnormalities. Chromosomes 1 and 4 were involved in breakdowns repeatedly. The range of heterogeneous chromosomes of the karyotypic set, characterized by structural instability, as a result of the stress effect of temperature in comparison with the exposure to X-rays was higher. Despite the outbreak of karyotypic instability after exposure to both types of stress, during the further cultivation, the analyzed eMSC were entering the phase of replicative aging and then perished without undergoing immortalization / oncogenic transformation.

Key words: human stem cells, X-ray radiation, heat shock, chromosomal rearrangements, breaks, aneuploidy