Significance of Human Individual Radiosensitivity in Formation of Low Dose Radiation Biological Effects

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Human individual sensitivity to ionizing radiation especially to low doses is the basic problem of modern radiobiology which is connected in Ukraine with the post Chernobyl period. In the presented work cytogenetic effects of low LET radiation in wide dose range with the attraction of the results of the estimation of chromosomal individual radiosensitivity value (modified G2 radiosensitivity assay) in group of healthy individuals (n=110) were investigated. It is shown that distribution of the obtained cytogenetic parameters of chromosomal radiosensitivity in referent sample does not correspond Gaussian law. Application of variation statistics has revealed existence of two subgroups of donors - with normal and increased radiation sensitivity at chromosomal level of peripheral blood lymphocytes (88,4 and 11,6 %of sample respectively). In the dose curves obtained for individuals with the increased chromosomal radiosensitivity (according to G2-assay) the linear component prevailed and in the low dose range (100-500 mGy) plateau (dose independent region) was not marked. Thus we consider expedient to take into account the value of individual chromosomal radiosensitivity (on the basis of G2 radiosensitivity assay) not only for the evaluation of radiation and cancer risk but for improvement of biological (cytogenetic) dosimetry.

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