P 148

HPRT mutant frequency and chromosomal aberrations induced by gamma and proton irradiations in human lymphocytes

M. MOGNATO[1], S. CANOVA[1], P. FERRARO[1], A. RUSSO[1], C. SALATA[1], P. TIVERON[2], S. FAVARETTO[2], R. CHERUBINI[2], AND L. CELOTTI[1]

Dipartimento di Biologia, Università di Padova, [1] Laboratori Nazionali di Legnaro-INFN, Padova, Italy

We are studying genetic and chromosomal effects induced by gamma-rays and protons in human lymphocytes in order to assess the persistence of genomic instability after exposure to proton irradiations. Human lymphocytes were irradiated with low-energy protons (27keV/μm) at the 7 MV Van de Graaff CN accelerator of the INFN-Laboratori Nazionali di Legnaro after their adhesion to mylar foil and with gamma rays (60Co). After irradiation lymphocytes were cultured in the appropriate conditions to measure *HPRT* mutant frequency and chromosomal aberrations (CA). Lymphocytes irradiated with gamma rays in the dose interval 1-4 Gy showed a survival from 64 to 9% and the frequency of mutant for the highest dose was $26/10^6$ cells. After proton irradiation (0.5-2.5 Gy), the survival decreased to 20% and the frequency of mutants reached the maximum value (33.5 $/10^6$ cells) at 1.5 Gy. Mutant clones derived from gamma and proton irradiated or non-irradiated cells are analysed by RT-PCR and MP-PCR to compare the mutations induced by the two irradiation kinds. From non selected clones we are obtaining cell populations derived from the irradiated cells to assess in the progeny the persistence of radiation-induced damages, which should be carefully considered for the therapeutical use of proton irradiation.