

Frequencies of Chromosomal Translocation and Clone in Splenocytes from Mice Continuously Irradiated with Low-Dose-Rate Gamma-Rays

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Abstract

Chromosomal translocations and clones were analyzed in splenic lymphocytes of female C3H mice exposed from 8 weeks of age up to a maximum of about 720 days under the specific pathogen free (SPF) condition with continuous ^{137}Cs - γ -rays at low-dose-rates (LDRs: 1 mGy/22h/day and 0.05 mGy/22h/day). Splenic lymphocytes from irradiated and non-irradiated control mice were cultured for 46h in the presence of LPS, Con A, and 2-ME to obtain metaphase spreads, and translocations were scored under a fluorescent microscope using multiplex-fluorescence *in situ* hybridization (M-FISH) method. Frequencies of translocations in mice continuously exposed to both LDRs were increased from 8 weeks of age to the irradiation periods of 617 days. However, the reasons for the difference of their frequencies were not clear between 1 mGy/22h/day and 0.05 mGy/22h/day because of the limited number of analyzed samples. The frequency in non-irradiated control mice also increased with aging from 512 days (565 days after birth). Clonal cells were observed from 407 days in the irradiation at 1 mGy/22h/day, from 617 days at the 0.05 mGy/22h/day and from 512 days in non-irradiated mice.

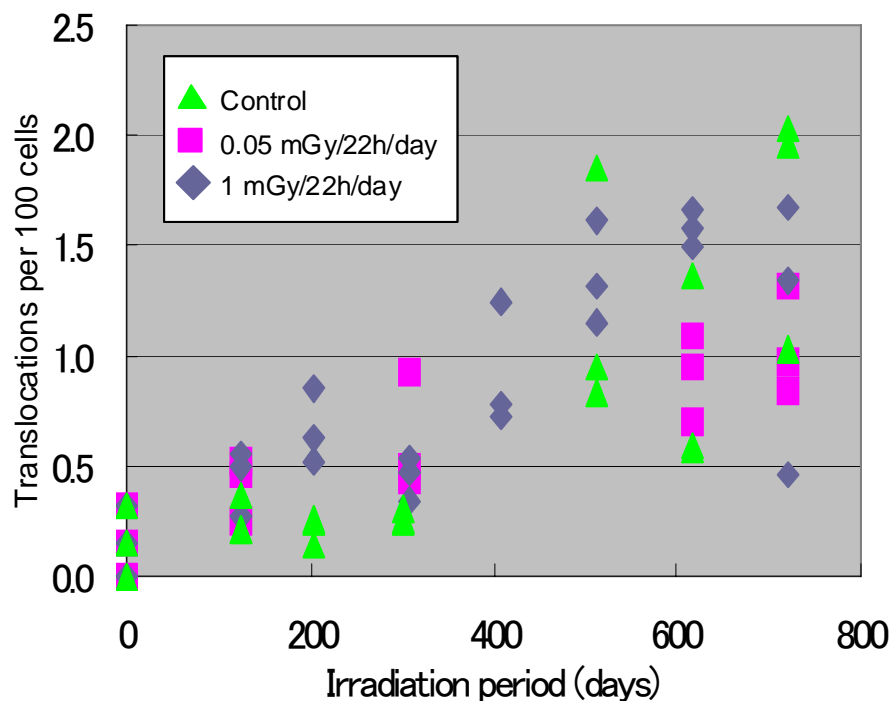


Fig. 1 Frequencies of chromosomal translocations in splenocytes from mice continuously irradiated with low-dose-rate gamma-rays. Each symbol indicates the value for an individual mouse.