

Gene Expression Analysis of Splenic Lymphocytes from Mice Irradiated with Low-Dose-Rate Gamma-Rays

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Abstract

Gene expressions of *p21* and *CyclinG1* were up-regulated by p53 activation in spleens of C3H mice irradiated with medium-dose-rate (MDR: 400 mGy/22h/day; 18.2 mGy/h) ^{137}Cs γ -ray, but gene expressions of *p21* and *CyclinG1* were not changed in spleen of mice irradiated with low-dose-rate (LDR: 20 mGy/22h/day; 0.91 mGy/h) γ -ray. T-lymphocytes were separated by magnetic beads from spleens, and gene expressions of *p21*, *CyclinG1*, *Bax* and *Mdm2* were examined by real-time PCR method after irradiation at 20 mGy/22h/day. Gene expressions of p53 targeted genes, *Bax*, *Mdm2* and *CyclinG1*, were not increased in splenic T-lymphocytes after LDR-irradiation, while *p21* alone was up-regulated. No increase in gene expression of *p21* was confirmed in splenic T-lymphocytes of p53-deficient mice after LDR-irradiation, indicating that gene expression of *p21* in T-lymphocytes is regulated by p53 activation in mice irradiated at LDR, similar to irradiations at MDR and high-dose-rate (HDR).

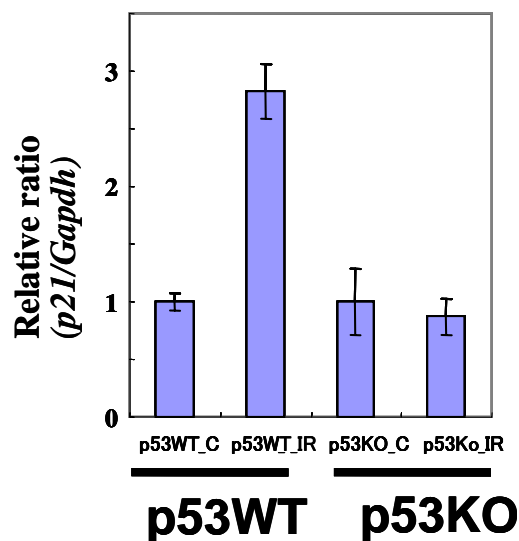


Fig. 1 Gene expressions of *p21* in CD4⁺CD8⁻ T-lymphocytes of spleens from wild type and p53-deficient mice irradiated at LDR (20 mGy/22h/day) for 10 days. p53WT_C: Non-irradiated p53-wild type mice, p53WT_IR: LDR-irradiated p53-wild type mice, p53KO_C: Non-irradiated p53-deficient mice, p53KO_IR: LDR-irradiated p53-deficient mice.

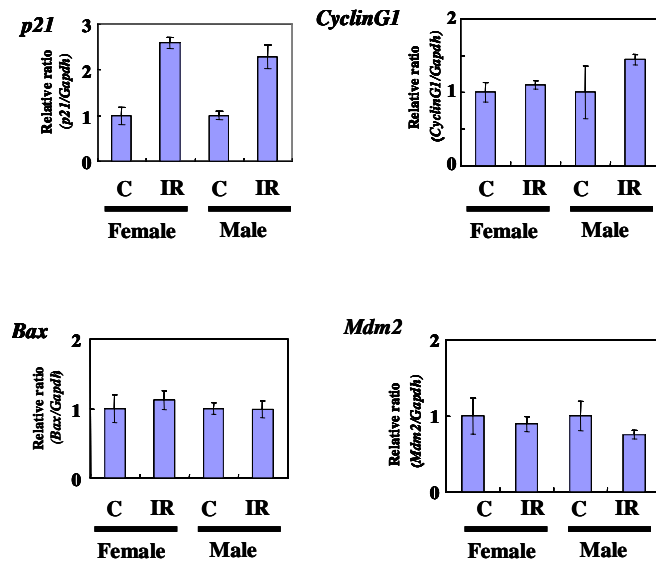


Fig. 2 Gene expressions of *p21*, *CyclinG1*, *Bax* and *Mdm2* in $CD4^+CD8^-$ T-lymphocytes of spleens from wild type mice irradiated at LDR (20 mGy/22h/day) for 104 days. C: Non-irradiated mice, IR: LDR-irradiated mice.