

250 **Modification of Radiosensitivity by Low Dose Irradiation -IX.**

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Pre-irradiation with 0.5 Gy of X-rays results in acquired radioresistance (decreased bone marrow death) 2 weeks later in ICR and C57BL strain of mice. Since partial-body irradiation to the trunk (head shielded) resulted in the radioresistance, the induction of the radioresistance has been thought to be the result of an adaptive response within the blood forming tissues.

In the present study, we examined whether the radioresistance is induced in splenectomized mice or not. Splenectomized ICR and C57BL mice were irradiated with 0.5 Gy, and were again irradiated with 7.2 Gy or 6.75 Gy, respectively, 2 weeks after the priming exposure. The 30-day survival rate was significantly improved in C57BL strain, but there was no change in the survival rate by the pre-irradiation in ICR. The spleen seems, therefore, essential for the adaptive response in ICR, but not in C57BL.

251 **Effect of low dose radiation on *in vitro* life span of human embryo cells**

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To study the effect of low dose radiation on *in vitro* life span of human embryo (HE) cells, we investigated population doubling numbers, chromosome aberrations and telomerase activity of HE cells. Before X-irradiation, we examined telomerase activity of strains of HE cells and found that some HE cells strains showed telomerase activity. Three strains of HE cells with different telomerase activities were then cultured and X-irradiated with single dose (52 cGy, 104 cGy, or 208 cGy) or multiple doses (2 cGy X 2/week, or 4 cGy X 2/week). In one strain of HE cells (HE31), radiation stimulated proliferative capacity of the cells and prolonged the life span *in vitro*. This supports our former finding. The telomerase activity of the cells decreased with successive passages and the activity was not correlated with ability to prolong life span. Altered chromosome constitutions were not observed in all cultures, suggesting that cells with chromosome aberrations were eliminated from the population because of growth disadvantage.

252 **Dose and Dose Rate Effectiveness Factors of Radiation Induced Myeloid Leukemia in C3H Male Mice.(III) Life Shortening and Elongation**

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C3H male mice were exposed for 22 hours daily to several dose rate and dose levels from Cs gamma-rays. The animals were then maintained for their normal life span. Dead mice were pathologically examined to estimated incidences of myeloid leukemia and other neoplasms. Mean life span was estimated using the Kaplan-Meire's Method. Mean life span of the group irradiated with the lowest dose of 0.125Gy in high dose rate groups(88.2cGy/min) was 30 days longer than that of the non-irradiated control group,710 days. Generalize Wilcoxon test showed the difference statistically significant. But in that dose range, estimated life spans varied so widely that causes of death should be strictly examined and the difference of life span should also be tested using various analytical means. Shortening of life span was observed in the low dose rate (0.0016cgy/min - 0.0298cGy/min) groups irradiated with 1Gy or more.