

- 45 Scid mutation affects the rate of PLD repair
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The effects of hypertonic 0.5 M NaCl treatment after irradiation on the radiosensitivity of cells from severe combined immunodeficient (scid) mouse were studied. Hypertonicity has been shown to cause radiosensitization due to fixation of potentially lethal damage (PLD) in a variety of cells. We found that radiosensitization was observed in scid cells as well as in normally radiosensitive Balb/c 3T3 cells, which demonstrates that ordinarily scid cells repair potentially lethal damage. The repair kinetics of PLD was then examined by delayed treatment with hypertonicity. The repair of PLD occurred very slowly in scid cells, which indicates that scid mutation affects the rate of repair. Fragments of human chromosome 8 contained in scid hybrid cells complemented the hyper radiosensitivity of the scid cells and the reduced rate of PLD repair. The product of a gene on chromosome 8 may participate in the repair of PLD as well as radiosensitivity.

- 46 Enhanced and Delayed PLD Repair in Reoxygenated MG-63 Osteosarcoma Cells
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The effect of reoxygenation and cell density on PLD repair *in vitro* was studied using MG-63 human osteosarcoma cells. Sparsely or densely plated cells were cultured hypoxically for 24hrs and irradiated 15min after reoxygenation. At various time after irradiation, cells were trypsinized and cell survival was assayed by colony forming ability. Immediate assay showed radiosensitization after chronic hypoxia compared to aerobic control. In both sparsely and densely plated state, 24hrs PLD repair ratio for reoxygenated cells at 3Gy was larger than that for aerobic control. This enhanced PLD repair was mainly due to decrease in α value. Furthermore, in the reoxygenated state, 24hrs PLD repair ratio for sparsely plated cells was much larger than that for densely plated one. The time course of PLD repair showed different kinetics between two cell density. Reoxygenated densely plated cells showed no repair till 4hrs, i.e., delayed PLD repair. Flow cytometric analysis showed no relationship between this kinetics and cell cycle distribution.

- 47 Effects of Radiation Fractionation on Murine Megakaryocyte Progenitor cells
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Effects of fractionated X-irradiation on megakaryocyte progenitor cells(CFU-Meg) in bone marrow and spleen of female BALB/c mice were studied *in vitro* using fibrin clot assay. Megakaryocyte colonies consisting of four or more acetylcholinesterase-positive cells were scored at 4 days after plating and incubation of femoral or splenic cell suspensions. The fibrin clots were first exposed to X-rays(200kVp,20mA) with graded doses of 0.1-1.9Gy and then they were kept at 37°C, and were secondary irradiated with equivalent fractionated doses at specified times(1,2,3,4,5 and 24 hours) after the first irradiation. For single doses of X-rays, the dose survival curves of CFU-Meg in both bone marrow and spleen displayed no shoulder with a single slope. The dose survival curves of ones with split doses of X-rays also showed of the same types of the curves. Moreover, the data indicated that there was an apparent absence of recovery in the survival of CFU-Meg after fractionated doses of irradiation.