Low dose effects / apoptosis (136-151)

136 Effects of low dose-γ-rays on the subsequent duration of the cell cycle in root meristem of barley.

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The radiation effects of γ-rays less than 1.0Gy on the root meristem of barley were investigated. The root apical meristem of un-irradiated of barley showed a homeostatic mitosis of about 5~7% during germination from 74 to 100h.
The germinating seedlings were irradiated at 74h with 0, 0.25, 0.50, 0.75 and 1.0Gy, then the subsequent frequency of mitoses observed in the meristem were scored. The mitotic index was suddenly increased following 4h with receive of 0.25 or 0.50Gy, while it declined to the control level within about 17h. And when the seedlings were pre-irradiated at 74h and immediately fixed after ^{3}H-TdR-treatment, neither increase nor decrease of the ^{3}H-labelled interphase cells were seen with less than 0.75Gy.
Then, the germinating seedlings pulse-labelled with ^{3}H-TdR after submitting to various doses were fixed at 2-hourly, followed by autoradiography. The percentages of ^{3}H-labelled anaphase cells were examined, relating to the radiation doses. And, the duration of a cell cycle and its component phases was determined for irradiated and un-irradiated meristem. It was suggested, conclusively that the probably temporal increase of mitotic index following 4h after 0.25 or 0.50Gy-irradiation was mainly occurred by the reduction of S and G_2-period after the irradiation.

137 Effect of Low Dose Irradiation on the ConA Response of Mouse Splenic Lymphocytes

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Immune functions, especially T-cell dependent immune functions, decrease with age. Several papers, however, reported augmentation of immune responses folloing low doses of single or fractional irradiation with X- or gamma-rays. We therefore investigated the effects of low dose radiation on ConA response of splenic lymphocytes of adult mice. This study was conducted in two strains of mice : AKR and SAM (SAMP1TA/Ngs) originally derived from AKR. 16 week-old mice were irradiated with 5 cGy once a week for 5 weeks. The enhancement of proliferative response of lymphocytes in response to ConA was observed in both AKR and SAM mice 1 week after final irradiation .