

Changes of testosterone production in adult mouse testis and serum
after wholebody irradiation

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Introduction : The testis is composed of four cell types like supporting cells, steroid-producing cells, connective tissue cells and germ cells. Apoptosis is a common phenomenon during spermatogenesis. Apoptosis of germ cells can also be induced by exposure to radiation. Previous studies have shown that most types of germ cells are rather radiosensitive while somatic cells in testis are much more radio-resistant. The somatic cells in testis are divided to mainly Sertoli and Leydig cells. Though somatic cells are more radio-resistant than germ cells, radiation can induce the impairment of their function. This damaged function of somatic cells may accelerates degeneration of germ cell indirectly. In the present study, we have examined the apoptotic effect of mouse testis and irradiation effect of steroidogenesis of Leydig cells after irradiation.

Methods : Eight-week-old male ICR mice were irradiated with 6.5 or 10 Gy. At days 1, 2, 3, 4 and 5 after wholebody irradiation, testes were removed and processed for paraffin sections and isolation of mRNA. We calculated gonad index from body and testis weights, and checked testosterone levels per testicular volume. Hormonal analysis on serum and testis was performed by means of radioimmunoassay. Semiquantitative reverse transcription-polymerase chain reaction techniques were used to

evaluate the expression kinetics of apoptotic gene after irradiation.

Results : Gamma irradiation in male mice showed that body weight and testosterone concentration and differential expression of apoptotic gene were reduced compared to that of non-irradiated ones. These results demonstrate that gamma-irradiation induces impairment of testicular function somewhat in adult mice.