Factors Related to Increase in Body Weights of B6C3F1 Female Mice Continuously Irradiated with Low-Dose-Rate Gamma-Rays

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Abstract

We previously reported significant increases in body weights in B6C3F1 mice continuously exposed to low-dose-rate (20 mGy/22h/ day) gamma-rays as compared to those of non-irradiated control mice. To clarify whether the increase in body weights of irradiated mice was related to adiposity, the weights of adipose tissues, size of adipocytes, and content of lipids in the liver and serum, and other factors related to lipid metabolism, including serum insulin and adipocytokines were compared with those of non-irradiated control mice. In addition, feed consumption of mice was measured throughout the long-term irradiation period. The reproducibility for increase in body weights, weights of adipose tissues, serum leptin and higher contents of lipid in the liver and serum was confirmed in irradiated mice by two different experiments, one was for group housing of 5 mice, and the other was for individual housing. Feed consumption measurements, however, revealed no significant difference between irradiated and non-irradiated control in the individually housed mice. In mice continuously irradiated at a medium-dose-rate (400 mGy/ 22h/ day) of gamma-rays, significant decrease in body weights, weights of adipose tissues, serum leptin and contents of lipid in the liver and serum were observed.

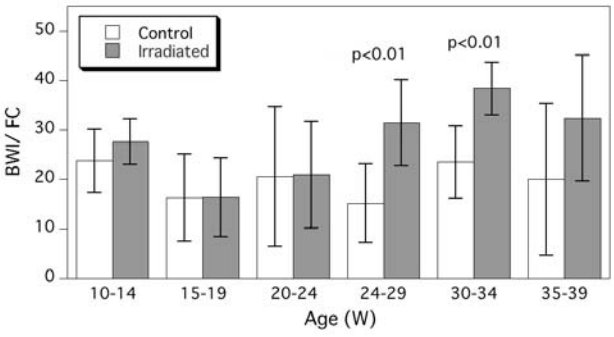

Fig. 1 Contribution of feed consumption to body weight increase in mice kept under individual housing. Ratio of amount of feed consumption (FC) to body weight increase (BWI) was calculated for every five weeks.

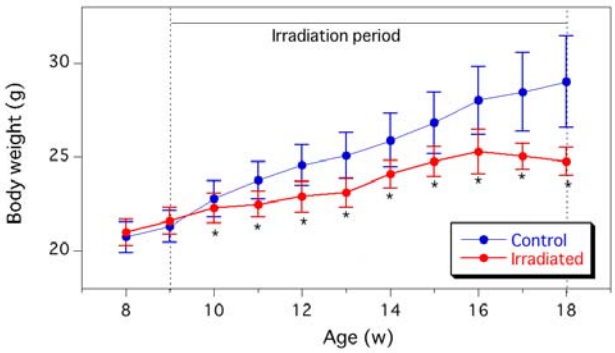

Fig. 2 Body weight change in mice continuously irradiated with γ-rays at 400 mGy/ day. Asterisks indicate a significant difference between irradiated and non-irradiated control mice (p=0.05).