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Negative correlation between levels of extracellular ubiquitin and regenerating blood cell count in irradiated mice

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Ubiquitin origin and especially its function in extracellular fluids and blood plasma are still unclear. Several studies have revealed that ubiquitin concentrations in body fluids are increased in patients with various diseases. However, serum concentrations of extracellular ubiquitin after irradiation in cancerous patients have not been studied. The main goal of our investigation is quantitative assessment of serum extracellular ubiquitin and assignment of correlation between extracellular levels of ubiquitin and blood cell count after irradiation in mice. We used 3Gy and 5.5Gy ¹³⁷Cs gamma-irradiated mice of six-week age for modeling cytopenia. Microscopy, immunological and statistical methods have been implicated for calculation of total cell count of peripheral blood cells and concentration changes of ubiquitin in blood serum of mice. Study revealed the negative correlation between levels of extracellular ubiquitin and regenerating blood cell counts. Our results may prove the hypothesis that ubiquitin levels increase in extracellular area due to cytolysis. However, here become apparent a question about diminution of ubiquitin level in the extracellular area during cell count elevation. Further investigation is required for elucidation of pathways of serum ubiquitin especially with regard to its prognostic importance in patients suffering from cancer subjected to radiotherapy.

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