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DOSIMETRIC INDICATORS OF ULCERATIVE-NECROTIC LESIONS OF THE DIGESTIVE TRACT OF MONOGASTRIC ANIMALS WITH INCORPORATED ”HOT” RADIOACTIVE PARTICLES

Friday, 15 July 2022 12:50 (20 minutes)

The analysis of the dosimetric pattern and experimentally established biological effects of internal irradiation of monogastric animals (rats, guinea pigs, piglets) is presented “hot” radioactive particles (RP) that cause ulcerative necrotic lesions of the gastrointestinal tract (GIT). Mathematical models of RP transport (in the GIT) and the formation of absorbed doses of β-radiation on the mucous membrane of the digestive tract have been developed. The features of the deep distribution of absorbed doses in the mucous membrane depending on the spectral characteristics of β-radiation are given. Calculations were performed using a multifunctional interactive computing system PTC Mathcad Prime 4.0. and a specialized dosimetric program VarSkin 4.0. The main factors in the formation of ulcerative lesions of the digestive tract are the extremely uneven distribution of particles in the contents and on the surface of the mucous membrane of the GIT, the concentration of particles in areas of the mucous membrane capable of depositing RP with the subsequent formation of high local levels of beta radiation. A dosimetric scale of extremely severe, severe, medium and mild degrees manifestations of acute radiation ulcerative gastroenterocolitis is proposed, which allows extrapolating the results of model experiments on scenarios of radioactive contamination of the environment by particles of various genesis. The data obtained can be taken into account in radiation safety tasks.

The speaker is a student or young scientist

Yes

Section

1. Nuclear technology and methods in medicine, radioecology

Primary author: Dr SHAPOVALOV, S.

Presenter: Dr SHAPOVALOV, S.

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