DETERMINATION OF DOSE LOADS DURING NCBT WITH ANIMALS

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Neutron capture boron therapy (NCBT) is a radiation science that is a tool for cancer treatment by selectively concentrating boron compounds in tumor cells and then exposing the tumor cells to epithermal radiation from a neutron beam. NCBT produces a nuclear reaction that occurs when boron-10, a stable isotope, is irradiated with low-energy thermal neutrons to form alpha particles (helium - 4) and lithium-7 recoil nuclei.

To conduct research without risk to human life and health, tissue-equivalent phantoms are used, which are very similar in structure and properties to human ones. Their variations are quite extensive. In the course of this work, we will consider the plastic that was studied at the IRT-T reactor, as well as the water phantom, which is under development, but there is already information on its creation.

Currently, a huge number of people suffer from cancer as a result of unfavorable environmental conditions and other factors, so the question of finding the most effective and suitable treatment method for the majority is most acute.

In this paper, it is proposed to determine the dose loads on the body during neutron capture therapy. For this purpose, the paper presents рассмотрениеa direct review of the therapy process; practical research with tissue-equivalent plastic and copper; search for studies with a water phantom for further use of the information found; conducting an experiment with an animal.

With the phantom, 10 calculations were performed for 3-4 measurements. The absorbed dose value decreases as you move away from the gate from the value of 0.389 Gy to the value of 0.120 Gy. Each block of the phantom contained two foils: one with a cadmium filter and one without. The results of calculating the flow density by the cadmium difference method and the data obtained are illustrated in the paper. The flow density also decreases with distance from the gate section from a value of 5.06 neutrons/$cm^2 \cdot s \cdot 10^8$ to a value of 0.37 neutrons/$cm^2 \cdot s \cdot 10^8$.

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THERAPY OF HER2-EXPRESSING HUMAN XENOGRAFTS IN MICE USING 177LU-LABELLED SCAFFOLD PROTEIN ABY-027: COMPATRISON WITH THERAPY USING ANTOBODY TRASTUZUMAB

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We have designed a new agent for radionuclide therapy of HER2-expressing tumours, ABY-027. ABY-027 includes Affibody molecule ZHER2:2891, an albumin binding domain ABD035 and DOTA chelator. ABY-027 was labelled with the beta-emitting radionuclide ^{177}Lu. The aim of this study was to evaluate efficacy of ^{177}Lu-ABY-027 in an animal model.