

221 Biological Effect of Intermediate Energy Neutrons on BNCT

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The Remodeling construction of the Heavy Water Facility of Kyoto University Reactor (KUR) and of the equipment for treatment on JRR-4 took place to use BNCT (Boron Neutron Capture Therapy). The remodeled facility is available for neutron irradiation with several energy spectra from almost pure thermal neutrons to epi-thermal neutrons, by control of the filters of cadmium and boral. Here, we report the biological effect of each neutron source by measurement of irradiated gold on technique of physics and engineering and also by measurement of surviving fraction of V79 Chinese hamster cells on technique of biology. As expected, cell killing gives good agreement with physical dosimetry. In epi-thermal neutron mode of each reactor, peak position of physical doimetry and cell killing is found in about 1.5cm depth from surface of phantom. This result affects the future treatment.

222 Comparison of Radiobiological Characteristics of Epithermal Neutron Beams between KUR and JRR4
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In order to start BNCT for malignant tumors by using epithermal neutrons, radiological characteristics of the beams were compared between KUR and JRR4. SCCVII tumor cells, murine squamous cell carcinoma, were used for the study. The 1ml-cryovials containing tumor cells at 10,000/ml with or without 10 ppm B-10 were arranged on acrylic plates by an adhesive tape to cover 10 cm diameter circular field. These plates were set into the water phantom of 30x30x20cm size at a constant interval. The vials were also arranged on the both side of the plate along the central axis of neutron beam. Irradiation field of neutron was 10 cm diameter. The cell killing effects were assessed by colony formation assay. KUR beam killed the cells very efficiently at shallow points of the phantom, but that of JRR4 beam was relatively small. The cell killing effect reached maximum at 1.5-2.0 cm depth when 10 ppm B-10 was combined with both neutron beams. The ratios of the effect produced by B-10 combination between at peak-effect depth and at shallow point were 4.0 and 1.2 for KUR- and JRR4- neutron beams, respectively. JRR4 epithermal neutron beam probably is richer in low energy epithermal neutrons than KUR beam.

223 Are Maalox(Aluminium hydroxide • magnesium hydroxide)and Mucosta(Rebamipide)Effective for Radiation Esophagitis?
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Mucosal damage, such as stomatitis or esophagitis is one of the most serious acute effects of irradiation for ENT area. We investigated the effectiveness and timing to use the medicine(Maalox and Mucosta)for the the patients with laryngeal cancer and thoracic esophageal cancer. Laryngeal cancer patients were restricted as stage I and II. Esophageal cancer patients were also selected under stage II with radiation field followed by JCOG protocol. These two medicine were administrated when the beginning of irradiation, after 20Gy of irradiation and after 40Gy of irradiation respectively. As a results, these two medicine were almost effective for radiation esophagitis and the earlier(from the beginning of irradiation), the better.