

SPACE LIFE SCIENCES SYMPOSIUM (A1)
Radiation Fields, Effects and Risks in Human Space Missions (5)

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THE RESEARCH OF CENTRAL NEURAL SYSTEM OF RATS MODEL LOCALIZED $^{56}\text{Fe}^{26+}$
HEAVY ION RADIATION INDUCED DAMAGE EFFECTS

Abstract

The space environment has the special characteristics of radiation, noise particularity and weightlessness, all of which have adverse effects on astronauts' muscles, bones, neurons and immune system. Some reports have shown that the impairment of radiation to human body becomes one of the central issues in space life science and the heavy ion radiation plays a key role in the damage effect of radiation. In this paper, the $^{56}\text{Fe}^{26+}$ heavy ion sourced radiation were used for SD rats to establish the local brain radiation model, the dose of radiation is 3.4Gy and 8Gy respectively, which detected by behavioral experiment and PET scan. The results show that the rat body ability has been constantly changed, rat brain tissue is damaged, and different regions of rat's brain gets various sensitivity after the heavy ion radiation. These findings are conducive to deeply understand the mechanism of space radiation risk and injury-relevant evaluation and prevention, as well as further clarification of whole-body irradiation induced overlapping effect, which may be supplied to the early warning system in space radiation.