



HOKKAIDO UNIVERSITY

Title	EXPERIMENTAL STUDIES ON THE EFFECTS OF INTERNAL RADIATION OF STRONTIUM-90 (^{90}Sr) ON THE MOUSE
Author(s)	HAYASHI, Mitsuaki
Citation	Japanese Journal of Veterinary Research, 13(2), 53-53
Issue Date	1965-06
Doc URL	https://hdl.handle.net/2115/1810
Type	departmental bulletin paper
File Information	KJ00002369136.pdf



**EXPERIMENTAL STUDIES ON THE EFFECTS OF INTERNAL
RADIATION OF STRONTIUM-90 (⁹⁰Sr) ON THE MOUSE***

Mitsuaki HAYASHI

*Radioisotope Laboratory
Third Research Division
National Institute of Animal Health
Kodaira, Tokyo, Japan*

Internal radiation effects of ⁹⁰Sr on mice, the dd-strain, four weeks old and weighing 15 to 20 g, were studied biologically and biochemically. The results obtained are summarized as follows:

1) Total retention of ⁹⁰Sr was 28.4% of the injected dose on the fifth day, 18.9% on the fifteenth day, and 17.6% on the forty-fifth day after intraperitoneal injection of ⁹⁰Sr. At twenty-four hours, ⁹⁰Sr concentrations (dpm/mg of Ca) in blood, bone, and organs were almost the same. However, the ⁹⁰Sr concentration (dpm/mg of Ca) in blood was almost one-tenth of that in bone by the 15th day.

2) Leukocyte counts on the 30th day after the ⁹⁰Sr injection were slightly, moderately and severely decreased when doses of 0.2 μ c/g, 0.4 to 0.8 μ c/g, and 1 to 2 μ c/g respectively were given. The LD₅₀ at 30 days for ⁹⁰Sr by the intraperitoneal injection was 4.0 μ c/g. The ⁹⁰Sr concentrations in bone for these cases were determined.

3) The incorporation of ³²P and ⁴⁵Ca into the bone were inhibited remarkably after the injection of ⁹⁰Sr. On the tenth day after the intraperitoneal injection of 2 μ c/g of ⁹⁰Sr the incorporation of ³²P into the spleen and into the lymph nodes rose remarkably, whereas the liver showed a moderate increase.

4) The incorporation of ³²P into the various phosphorous fractions in the spleen and liver were observed. In the liver the synthesis and utilization of phospholipids had markedly increased. But in the spleen the synthesis and utilization of the nucleic acid, phosphoprotein and acid soluble phosphorous compounds as well as phospholipids had markedly increased.

5) The oxygen consumption of the liver tissue was almost the same as that of the control animals, but the activity of the ATPase increased markedly while the glycogen level decreased.

* The original report of this work will appear in the *Nat. Inst. Anim. Hlth Quart.*, **5**, (1965).