



HAL
open science

Sexual dimorphism in Cs137 accumulation after chronic low dose exposure in mice

Helene Quelquejay, Chloe Brizais, Eva Cron, Florence Bachelot, V. Monceau, Stephane Grison, Raphael Bo, David Broggio, Yoann Ristic, Dmitry Klovov, et al.

► To cite this version:

Helene Quelquejay, Chloe Brizais, Eva Cron, Florence Bachelot, V. Monceau, et al.. Sexual dimorphism in Cs137 accumulation after chronic low dose exposure in mice. The 48th European Radiation Research Society Meeting - 2024, Sep 2024, Porto (Portugal), Portugal. irsn-04594703

HAL Id: irsn-04594703

<https://irsn.hal.science/irsn-04594703v1>

Submitted on 30 May 2024

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Sexual dimorphism in Cs137 accumulation after chronic low dose exposure in mice

Quelquejay H.¹, Brizais C.¹, Cron E.¹, Bachelot F.¹, Monceau V.¹, Grison S.¹, Bo R.², Broggio D.², Ristic Y.², Klokov D.¹, **Ebrahimian T.**¹

The presence of ¹³⁷Cesium (¹³⁷Cs) in the environment after nuclear accidents at Chernobyl and Fukushima Daiichi raises many health issues for the surrounding populations chronically exposed through the food chain. Unlike previous *in vivo* studies that focused solely on male exposures, this experimental research aims to assess the dosimetry and biodistribution of low-dose cesium contamination in both male and female C57bl6 mice. This study establishes a model for chronic ingestion of ¹³⁷Cs, simulating various exposure scenarios.

Male and female C57bl6 mice are exposed to concentrations resembling those ingested daily by residents in contaminated areas (20kBq/L), as well as 5- and 10-times higher concentrations to mimic potential cardiovascular damage-inducing levels. We subjected the animals to contaminations lasting either 2 or 6 months. Throughout this period, the animals were closely monitored to determine and quantify the absorbed doses by zooradiometry or measuring the concentration of Cs137 in different organs.

After 2 and 6 months exposure to chronic Cs137 in drinking water at 500kBq/L the absorbed dose is 1,6 times less in female mice compared to male mice. 40.02 mGy in female mice and 66.86 mGy in male mice after 2 months exposure. 187.7 mGy in female mice and 309.3 mGy in male mice after 6 months exposure. This dimorphism is also expressed in different organs and is highly expressed in skeletal muscle, heart and kidneys.

In this study we demonstrated a sexual dimorphism in cesium accumulation in total body and across different organs. This disparity is primarily attributed to higher cesium excretion via urine in females.