

## Long-Term Study on the Effects of Housing C57BL/6NCrI Mice in Cages Equipped With Wireless Technology Generating Extremely Low-Intensity Electromagnetic Fields

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### Abstract

The recent development of mouse cages equipped with monitoring wireless technology raised questions on the potential effects on animals induced by electromagnetic fields (EMFs) generated by electronic boards positioned underneath the cages. The aims of this study were to characterize the EMF produced by digitally ventilated cages (DVC) and perform a clinicopathological study on mice maintained in DVC for up to 1 year. The EMFs were measured in empty individually ventilated cages (IVC) and DVC. Male ( $n = 160$ ) and female ( $n = 160$ ) C57BL/6NCrI mice were randomly housed in IVC and DVC in a single rack, 4 mice per cage. Body weight and food and water consumption were recorded at 14-day intervals. At sacrifice (days 60, 120, 180, and 365), body and testes weight was measured, and necropsy, hematology, bone marrow cytology, histology, and immunohistochemistry for cleaved-caspase 3 on the testes were performed. Digitally ventilated cages produced extremely low-intensity electric fields ranging from 5 Hz to 3 GHz. No exposure-related clinical signs and mortality occurred. Occasional statistical differences in body weight, food and water consumption, hematology, bone marrow, and histopathology were recorded, but considered without biological or clinical relevance. In conclusion, long-term maintenance in DVC had no definite effects on C57BL/6NCrI mice.

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