

Supplementary Table S1. Dendritic spine density in the hippocampal DG region after 2,100 MHz microwave exposure.

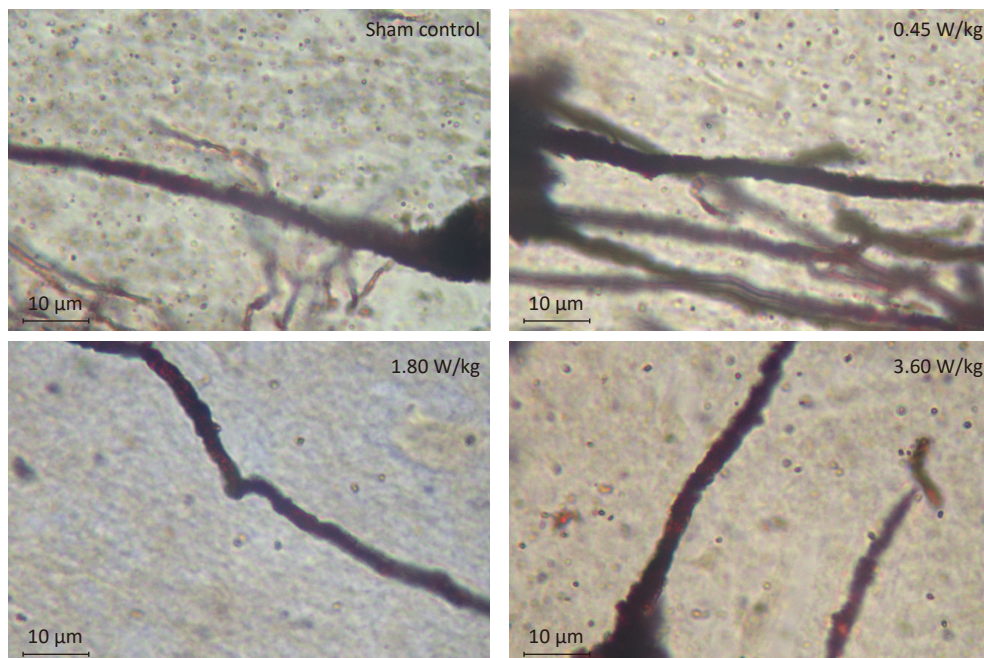
Groups	Dendritic spine density (#/10 μm)
Sham control	7.08 \pm 0.29
0.45 W/kg	6.36 \pm 0.35*
1.80 W/kg	6.21 \pm 0.31*
3.60 W/kg	6.04 \pm 0.25**

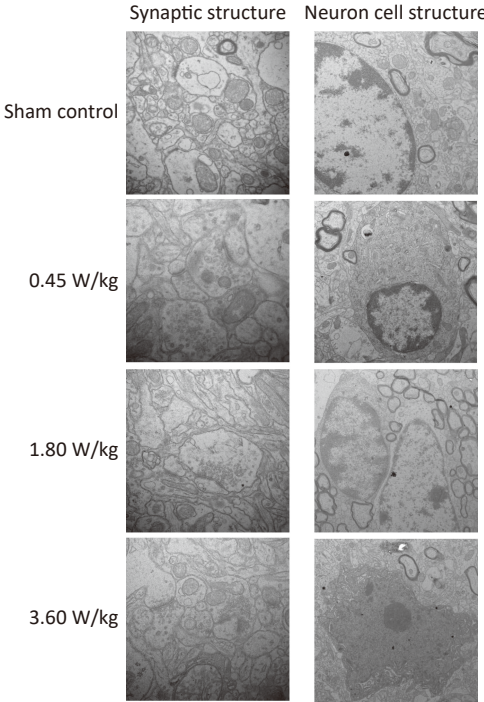
Note. * $P < 0.05$, ** $P < 0.01$ vs. sham control. $n = 4$. All data shown are mean \pm SEM.

Supplementary Table S2. mRNA level of Sbdn in the mouse brain after 2,100 MHz microwave exposure.

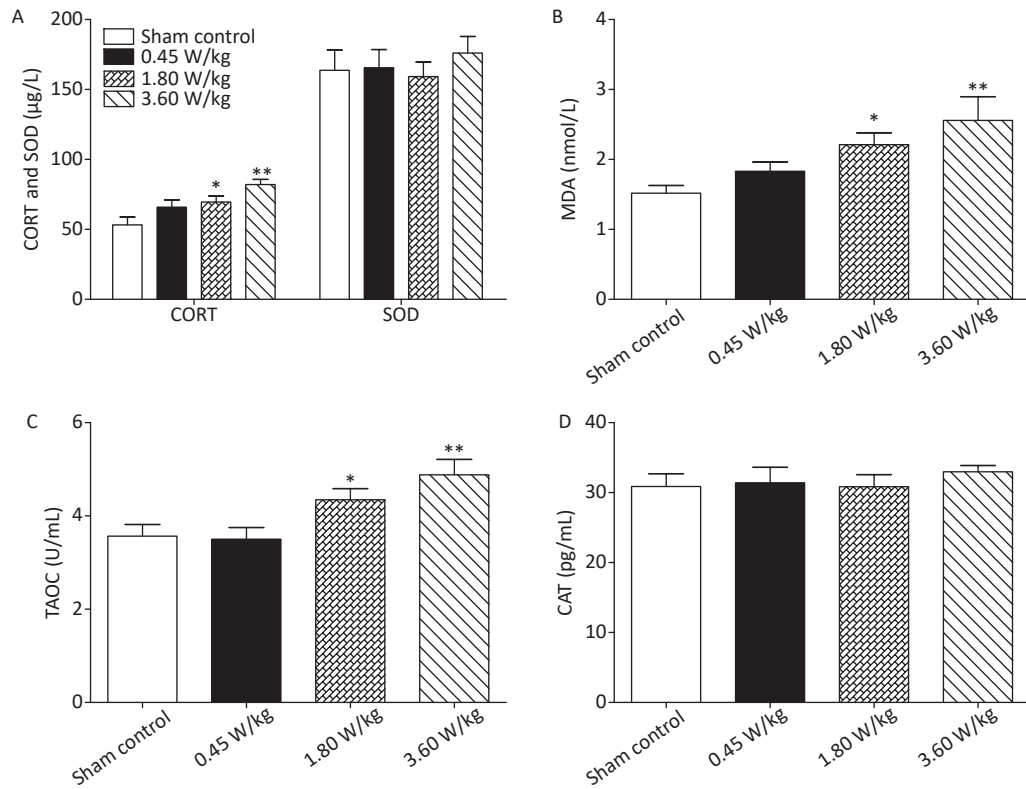
Groups	Relative Sbdn expression level
Sham control	1.00 \pm 0.06
0.45 W/kg	0.70 \pm 0.01**
1.80 W/kg	0.65 \pm 0.06**
3.60 W/kg	0.59 \pm 0.07**

Note. ** $P < 0.01$ vs. sham control. $n = 5$. All data shown are mean \pm SEM.

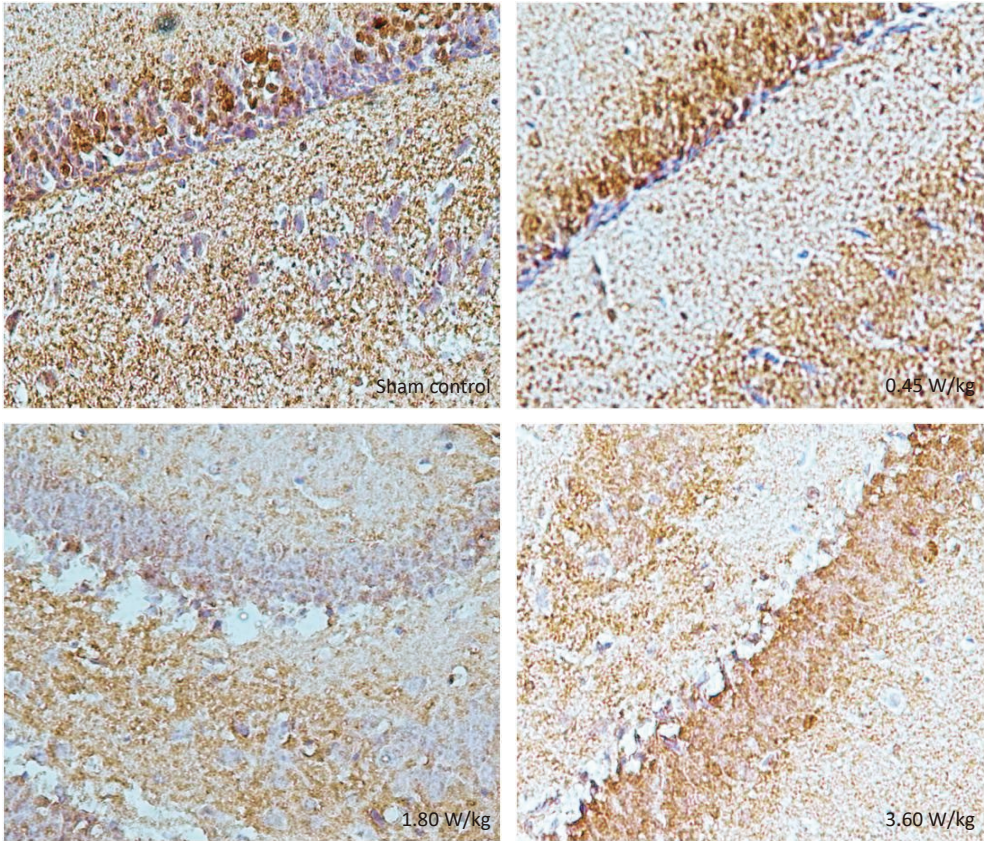
**Supplementary Figure S1.** Representative photographs of dendritic spines in the hippocampal DG region after 2,100 MHz microwave exposure (oil microscope $\times 100$).



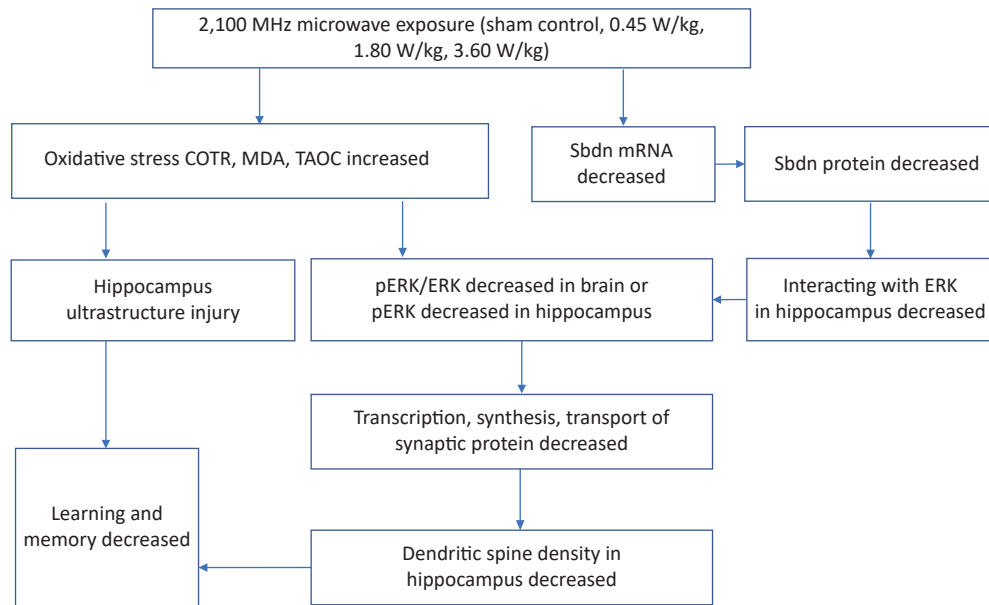
Supplementary Figure S2. Representative photographs of mouse hippocampal neurons by electron microscopy after 2,100 MHz microwave exposure (Scale bar = 500 nm).



Supplementary Figure S3. Oxidative stress response in the serum after 2,100 MHz microwave exposure. (A) Serum CORT and SOD levels. (B) Serum MDA level. (C) Serum TAOC level. (D) Serum CAT level. * $P < 0.05$; ** $P < 0.01$ vs. sham control. $n = 8$. All data shown are mean \pm SEM.



Supplementary Figure S4. Representative immunohistochemical images of pERK in the DG region after 2,100 MHz microwave exposure.



Supplementary Figure S5. Mechanism by which long-term low-intensity microwaves degrade learning and memory.