

## AB037. Long-term exposure to the mobile phone radiation decreased the sperm quality of Sprague Dawley rats

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**Background:** To investigate the long-term effect of mobile phone radiation on the sperm quality of male Sprague Dawley (SD) rats.

**Methods:** Mobile phones (Nokia, 1.58 W/kg, 4G mobile network) were applied to emit the radiofrequency electromagnetic radiation. And rats were exposed to the mobile phone radiation for 150 days, 4 hours/day. During the modeling process, the mobile phone was in an active call and received an extra call every 10 minutes. Epididymis sperm quality analysis, mating experiment, hematoxylin-eosin staining, reactive oxygen species analysis and western blot were performed to comprehensively assess the effect of mobile phone radiation on the sperm quality and testis of rats.

**Results:** The sperm concentration, sperm motility and sperm viability were significantly downregulated, and the abnormal sperm rate and sperm DNA fragmentation index

were upregulated in the rats exposing to the mobile phone radiation for 150 days. The mating experiment showed that the cub weight of rats decreased after exposing to the mobile phone radiation for 150 days. The testicular malondialdehyde (MDA) and 4-Hydroxynonenal (HNE) level were upregulated whereas the superoxide dismutase (SOD), catalase (CAT) and glutathione (GSH) level were downregulated in rats exposing to the mobile phone radiation for 150 days. In addition, the protein level of Fas, FasL and the rate of cleaved-caspase-3 to pro-caspase-3 were upregulated in the testis of these rats. The hematoxylin and eosin (H&E) staining showed that the spermatogenesis was disturbed in rats exposing to the mobile phone radiation for 150 days. However, the sperm quality and spermatogenesis of rats did not significantly change after exposing to the mobile phone radiation for 100 or 50 days.

**Conclusions:** Long-term exposure to the mobile phone radiation decreased the sperm quality of rats, which might attribute to disturbing the spermatogenesis.

**Keywords:** Mobile phone radiation; 4G mobile network; Sperm quality; spermatogenesis

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