OBJECTIVE:

It has been suggested that electromagnetic radiation (EMR) by wireless devices (2.45 GHz) induces testicular apoptosis. We investigated if supplemental selenium (Se) and L-carnitine may reduce this adverse effect.

MATERIAL:

Twelve-week old male Wistar albino rats were used in this study. Twenty-four rats were equally divided into four groups which were named as: sham group, EMR-only, EMR+L-carnitine (1.5 mg L-carnitine/kg/day) and EMR+Se (1.5 mg Se/kg/-every other day).

RESULTS:

The level of Bcl-2, Bax, caspase-3 and -8 were compared and a significant difference was found between the sham and EMR-only groups (p < 0.05), and Bcl-2, Bax, caspase-3 and -8 expressions increased in the EMR-only group. The level of Bcl-2, Bax, tumour necrosis factor-alpha (TNF-α), caspase-3 and -8 were compared and a significant difference was found between the sham and EMR+L-carnitine groups (p < 0.05) and Bcl-2, Bax, TNF-α, caspase-3 and -8 expressions increased in the EMR+L-carnitine group. The level of Bcl-2, Bax, TNF-α, caspase-3 and -8 were compared and a significant difference was found between the sham and EMR+Se groups (p < 0.05) and Bcl-2, Bax, TNF-α, caspase-3 and -8 expressions increased in the EMR+Se group. When the expression of caspase-8 was compared, a significant difference was found between the EMR-only and EMR+Se groups (p < 0.05). Caspase-8 expression decreased in EMR+Se group compared with EMR-only group.

CONCLUSION:

Electromagnetic radiation exposure resulted in testicular apoptosis in rats, mainly by the intrinsic pathways by down-regulated expression of caspase-8. Reduction in the activation of the intrinsic pathway of apoptosis was found higher with selenium administration compared with L-carnitine administration.