The electromagnetic waves (EMW) emitted by commonly used mobile phones are reported to have effects on many tissues. In this study, we aimed to show effects of EMW emitted by mobile phone with DSC 1800 carrier frequency which has the highest SAR value 1.79 W/kg on the cell proliferation, cell death and blood-testis barrier of rat testis. Wistar-albino rats were used in this study and were formed to five experimental groups as 1) Control, 2) Stand by Fetal, 3) Stand by, 4) EMW Fetal and 5) EMW (n=6). Testes of rats in all experimental groups were taken at postnatal 60th day under ether anesthesia. Body and testis weights of the rats were weighed, diameter and area of seminiferous tubules were measured, presence of proliferative and apoptotic cells were determined and quantitative analysis of ZO-1 were done. To establish the ultrastructural morphology we used transmission electron microscopic techniques. In the tissues ratios of MDA and GSH; in the serum levels of LH, FSH and testosterone were biochemically analyzed. While body weight of rat was decreased in only EMW group, testis weight and seminiferous tubule area were decreased in EMW Fetal and EMW groups. Seminiferous tubule diameters were decreased in all experimental groups. However apoptotic index were significantly increased in Stand by, EMW and EMW Fetal, proliferative index were significantly decreased. In EMW and EMW Fetal groups irregular dispersion of ZO-1 and significantly decreased levels of ZO-1 protein were shown. In electron microscopic examinations small vacuols between and inside the cells were determined in Stand by and EMW Fetal groups; big and great number of vacuols were shown in EMW group. While levels of GSH were significantly decreased in all experimental groups, levels of MDA were significantly increased. However no changes were monitored between serum FSH and LH levels of experimental groups, serum testosterone levels were significantly decreased in EMW and EMW Fetal groups. However it has less effects on stand by mode, cell phones may cause of infertility of rats via decreasing testosterone levels, inducing cell death and breaking down the blood-testis barrier.

**Key Words:** Cell phone, Electromagnetic waves, Rat, Testis

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