

### Üyelerimizin Yayın Özetleri

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Derginin adı tam olarak, ya da *Index Medicus'* un (*Medline*) benimsediği kısaltma ile yazılmalıdır
2. **Makale Başlığı** (koyu) [9 pt]
3. YAZARLAR (SMALCAP) [8 pt]
4. Yazarların çalıştığı kurumlar (*italik*) [7 pt]
5. Özet [9 pt]
6. *Key words* (*italik*) [9 pt]

şeklinde 6 bölüm halinde düzenlenmeli, metin kesinlikle orijinali ile aynı olmalı, yukardaki altı bölümden yazarların çalıştığı kurumlar, *key words* orijinal baskıda yok ise yazılmamalıdır.

#### Bildiriler:

YAZARLAR (SMALCAP). **Bildiri Başlığı** (koyu).  
*Sunulduğu Toplantının adı (Kısaltma yerine açık yazım tercih edilmelidir), Kongre kitapçığında özetin yazıldığı sayfa (var ise), Toplantının Yeri, Tarihi (italik).*

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### ÜYELERİMİZİN 1998 SONRASI YAYIN ÖZETLERİ

Science Citation Index

Tarafından Taranan Dergilerdeki  
Yayınlar



TBFD 024

Electro Magnetobiol. 17: (2) 185-194 1998,  
**Effects of microwaves on the phagocytic activity of variously treated rat macrophages**  
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The purpose of this study was to investigate the effects of 2450 MHz and 9450 MHz microwaves on the phagocytic activity of rat macrophages in rats without treatment and treated with exercise, vitamins C and E, dexamethasone, and both dexamethasone and vitamin C. Alveolar and peritoneal exudates from Swiss albino rats were exposed to microwaves for 1, 5, and 10 secs. The results were analyzed with the Mann-Whitney U test. In the group exposed to 2450-MHz microwaves, altered phagocytic activity of macrophages was found to be significant for each exposure period ( $p < .05$ ). In the groups that were additionally subjected to vitamin C, vitamin E, and combined treatment with vitamin C and dexamethasone, phagocytic activities were found to be changed for only 10 s ( $p < .05$ ), 1 and 5 s ( $p < .05$ ), and 1 s ( $p < .05$ ), exposure, respectively. In the groups exposed to 9450-MHz microwaves alone and microwaves plus vitamin E, altered phagocytic activities were found to be significant for each exposure period ( $p < .05$ ) and for only 1 s exposure ( $p < .05$ ), respectively. The differences between pre- and postexposure temperatures were also found to be significant ( $p < .05$ ).

**Keywords:** *microwave, phagocytic activity, vitamins, dexamethasone, exercise*

## İÇİNDEKİLER

### ● Üyelerimizin yayın özetleri

**Hormone levels of people occupationally exposed to radiofrequencies.**

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The present article intended to investigate some hormone levels of technicians in the radio-broadcasting, television (TV) and radio-link stations. The study was carried out on 43 technicians from 20 to 59 years age occupationally exposed to radiofrequency (RF) and microwave (MW) radiation. 20 unexposed and voluntary persons from 20 to 59 years age were accepted as a control group. We determined the levels of some hormones as triiodothyronine (T-3), tetraiodothyronine (T-4), thyroid stimulant hormone (TSH), free T-4, estradiol, dehydroepiandrosterone sulfate (DHEA), testosterone, cortisol and progesterone in the technicians under investigation. The hormone levels of exposure groups were statistically compared with the unexposed control group. T-3, T-4, estradiol, testosterone and progesterone levels of technicians in the radio-link and TV transmitter stations were found to be significant ( $p < 0.05$ ,  $p < 0.001$ ). T-3, T-4, TSH, estradiol and progesterone levels of technicians in the broadcasting station were also found to be significant ( $p < 0.001$ ). In conclusion some hormone levels of technicians under investigation were altered by RF/MW.

**Keywords:** radiofrequency, microwave, hormones, technicians

**Whole-body microwave exposure emitted by cellular phones and testicular function of rats**

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This study investigated whether there are adverse effects due to microwave exposure emitted by cellular phones in male rats. Eighteen Wistar Albino rats were separated into three groups, a sham group and two experimental groups. The rats were confined in Plexiglas cages and cellular phones were placed 0.5 cm under the cages. In the first experimental group, cellular phones were in standby position for 2 h. In the second experimental group, phones were turned to the speech position three times each for 1 min duration over 2 h. Rats in the first and second experimental groups were exposed to microwaves emitted by phones for 2 h/day for a duration of 1 month. After the last exposure the rats were killed. Brain, eyes, ears, liver, heart, lungs, stomach, kidneys, testes, small and large intestines and skull of the rats were observed histologically. The decrease of epididymal sperm counts in the speech groups were not found to be significant ( $P > 0.05$ ). Differences in terms of normal and abnormal sperm forms were not observed ( $P > 0.05$ ). Histological changes especially observed in the testes of rats of the

speech groups. Seminiferous tubular diameter of rat testes in the standby and speech groups was found to be lower than the sham group ( $P < 0.05$ ). Rectal temperatures of rats in the speech group were found to be higher than the sham and standby groups ( $P < 0.05$ ). The rectal temperatures of rats before and after exposure were also found to be significantly higher in the speech group ( $P < 0.05$ ). Specific absorption rate (SAR) was determined as 0.141 W/kg.

**Author Keywords:** reproductive function, testes, microwave, cellular phones

**Effect of nonionizing radiation on plasmid DNA of E.coli puc9**

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The present experiment was carried out to investigate whether 9450 MHz and 2450 MHz microwave exposure (MW) affect to the plasmid DNA of Escherichia coli puc 9 or not. Suspensions of E.coli puc 9 were exposed to microwave radiation at 2450 MHz (55,110,165,220 and 275 W for 30 and 60 second) and 9450 MHz (2.65mW/cm(2) for 10,20,40 and 60 minutes). However, plasmid DNA of E.coli puc 9 were also exposed to 9450 MHz (10,20,40 and 60 minutes) and 2450 MHz (55,110,165,220 and 275 W for 30 and 60 second) Microwave. After exposures of E.coli puc 9, the plasmid DNA were isolated and evaluated by AGE assay. We found that amount of plasmid DNA was not changed in 9450 MHz and 2450 MHz MW exposure. The difference of temperatures between before and after 2450 MHz MW exposures were found to be significant ( $P < 0.01$ ). It was concluded that E.coli puc 9 plasmid DNA was not affected by 9450 MHz and 2450 MHz Microwave radiation.

**Keywords:** microwaves, E.coli puc9, plasmid DNA

**Effects of whole body chronic 50 Hz sinusoidal weak magnetic field exposure on the rat pituitary hormones**

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We have investigated whether functions of pituitary gland change when the rats are exposed to sinusoidal magnetic fields at dark. In this study, 26 Wistar Albino rats were divided into two groups as experimental (n=14) and sham group (n=12). Experimental was exposed to 0.75 mT sinusoidal magnetic field produced by Helmholtz coils and sham group was housed between inactivated Helmholtz coils, for one month.

After one month Animals were sacrificed and their blood were taken. Serum hormone levels were determined by Radioimmunoassay method. In exposed group, serum cortisol TSH, FSH and prolactin concentration did not statistically changed according to sham exposed group ( $p > 0.05$ ), but Growth Hormone and testosterone levels statistically changed ( $p < 0.05$ ).

**Keywords:** Pituitary hormones, magnetic field exposure, weak magnetic fields

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**Effect of chronic low-intensity microwave radiation on sperm count, sperm morphology, and testicular and epididymal tissues of rats**

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The aim of this study was to investigate the effect of chronic microwave exposure on sperm count, sperm morphology, and the morphology of rat testis and epididymes. Continuous wave microwave radiation (9450 MHz) specific absorption rate 1.80 W/kg and power density 2.65 mW/cm<sup>2</sup>, was administered for 1 h a day for 13, 26, 39, and 52 days, which corresponded to 1, 2, 3, and 4 cycles of seminiferous epithelium, in mature male Sprague-Dawley rats. The rats were sacrificed under Ketalar anesthesia the day after exposure. Then epididymal sperm count, sperm morphology, and the weights of testis, epididymes, seminal vesicles, and prostate were determined. Histologic examinations of testis and epididymes were performed. The parameters were compared with sham groups. Epididymal sperm count decreased significantly only in the 52-day exposure group ( $p < 0.05$ ). The percentage of abnormal sperm count changed significantly in the 26-, 39-, and 52-day exposure groups ( $p < 0.05$ ,  $p < 0.05$ , and  $p < 0.001$ , respectively). The weights of testis and epididymes also changed significantly in the 26-, 39-, and 52-day exposure groups ( $p < 0.05$ ,  $p < 0.05$ , and  $p < 0.05$ , respectively). Necrotic tubules, interstitial edema, perforated and necrotic tubules, decrease of spermatogenesis, and absent germinal epithelium in some tubules were observed in the exposed rat testes. In addition, we observed atrophy, interstitial edema, mononuclear cell infiltration, and increased fibroblastic activity in the exposed rat epididymes. We concluded that epididymal sperm count and morphology and weight and morphology of testis and epididymes were affected by chronic prolonged microwave exposure. The incidence of symptoms mentioned here depended on exposure duration.

**Keywords:** Electromagnetic-radiation, strand breaks, brain cells, spermatozoa, hamster

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**Effects of whole-body chronic microwave exposure on some hormones of variously treated rats**

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To investigate the effects of chronic whole-body microwave exposure, on serum Thyroid Stimulating Hormone (TSH), thyroxin (T-4), triiodothyronine (T-3), Cortisol, Growth Hormone (GH), Follicular Stimulating Hormone (FSH) and Estradiol concentrations, Wistar-albino female rats without treated and treated Vitamin C and Vitamin E were exposed to Microwave (MW) with a frequency of 9.450 MHz at the power density of 2.65 mW/cm<sup>2</sup> with corresponding specific absorption rate of 1.80 W/kg for 1h/day during 21 days. Vitamin C (150

mg/kg/day) and Vitamin E (150 mg/kg/day) were administrated during last seven exposure days to MW+Vit.C (n=8) and MW+Vit.E (n=8) groups respectively. Rectal temperatures were measured in all female rats. Serum levels of GH and FSH decreased ( $p < 0.05$ ,  $p < 0.01$  respectively) while estradiol levels increased in MW exposure group ( $p < 0.05$ ). But other hormones did not change in MW group (n=8). All hormone levels of rats treated with Vitamin C did not change ( $p > 0.05$ ). T-3 and T-4 hormones of exposed rats were found to be significant at MW +Vit.E group according to MW group ( $p < 0.05$ ). Rectal temperature differences were found to be significant in experimental groups according to sham group (n=8) ( $p < 0.05$ ). It was concluded that the changes of hormone concentrations under study was consistent with MW-induced thermal stimulation of Hypothalamic-Hypophysial-Adrenal (HHA) and Hypothalamic-Hypophysial-Thyroid (HHT) activity and Vitamin E might play role in changing T-3 and T-4 hormones.

**Keywords:** microwave, hormone, Vitamin C, Vitamin E

Environmental Health and Preventive Medicine, 2: 10, 1-4, (1998).

**Do radiofrequency radiation affect the auditory system of people with occupational exposure ?**

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The present study intended to investigate whether radiofrequency (RF) affects auditory system of people who are occupationally exposed to RF in terms of noise-induced hearing loss (NIHL) or not. The study was carried out on 31 men from 26 to 53 years of age. All of them have been working in the Diyarbakir Radio Broadcasting Station. On the other hand, the control group was based on 30 unexposed voluntary and healthy men. The range of age for control group was the same as in the exposed group (experimental group). The results of the present study showed that the incidence of NIHL in the exposed group is more and more than that of the unexposed (control) group. The incidence of NIHL was approximately found 70 % for exposed group and 6% for unexposed group. The difference of the incidence of NIHL between exposed and unexposed groups were statistically found significant for right and left ears at "4 kHz notch" ( $p < 0.001$ ). Hearing loss was not observed below 1 kHz. The percentage difference in the incidence of hearing loss (decibel) between control and experimental group was found insignificant for frequency below 1 kHz ( $p > 0.05$ ). The experimental group was also divided to three subgroups of technicians, officers and men staying in the quarters of radio broadcasting station. Three subgroups were compared with one another statistically. The incidence of NIHL for the right ears of technicians was found higher than the officer ( $p < 0.05$ ). The incidence of NIHL for the left ears of men staying in quarters was found higher than officers ( $p < 0.05$ ). The other results of comparison were found insignificant ( $p > 0.05$ ). In conclusion, the incidence of NIHL at "4 kHz Notch" in the experimental group was found more common than the control group.

**Key words:** Radiofrequency radiation, Noise-induced hearing loss

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Eastern Journal of Medicine, 4 (1) : 10-12, (1999).

**Blood biochemical parameters of the radio-link station.**

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The aim of this study was to investigate the effects of radiofrequency (RF) and microwave (MW) on the people occupationally exposed to non-ionizing radiation. The study was carried out on 19 persons from 25 to 59 years old, 9 of them were radio-link technicians and the others were workers. We determined 22 biochemical parameters of blood serum. Headache, dizziness and inability to hear were observed clinically. An increase was observed in cholesterol, uric acid, total protein and creatin levels. The level of creatin kinase decreased. The effect of low frequency radiation (e.g. radiofrequency and microwave) on serum biochemical parameters is variable. We believe that the effect of RF and MW on human must be investigated widely.

**Key words:** Radiofrequency, biological effects

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Urol Int, 62 (1): 1-7 (1999).

Quantitative residual cortical activity measurement: Appropriate test for diagnosis of renal artery stenosis?

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**Abstract:**

**Objectives:** To evaluate the diagnostic validity of quantitative measurement of residual cortical activity (RCA) in renal artery stenosis (RAS).

**Methods:** In 45 patients with a high clinical likelihood of renovascular hypertension (RVH) and unimpaired renal function, dynamic imaging was performed after an intravenous bolus injection of 148 MBq Tc-99m MAG3 for both baseline renoscintigraphy and captopril renography following oral application of 50 mg captopril. RCA was measured according to the Sfa-kianakis method: RCA = cortical counts at 20 min/counts at peak x 100%. An increase in RCA of greater than or equal to 5% from baseline was considered indicative of RAS. After renography, all patients underwent selective transfemoral angiography with the digital subtraction technique. A luminal reduction of greater than or

equal to 50% was considered as proof of RAS. Results: The number of kidneys that had a change of 15% in RCA values was 12 (27.2%) in normal kidneys, 7 (58.3%) in the patients with bilateral RAS, 14 (82.3%) in the patients with unilateral RAS, and 21 (72.4%) in overall kidneys with RAS. The positive test ratio in pathologic groups was significantly higher than normal (p < 0.05). The sensitivity and specificity of the RCA test were 72.4 and 72.7%, respectively; the positive and negative predictive values were 63.6 and 80%, respectively.

**Conclusion:** Quantitative measurements of RCA can be used as a diagnostic parameter of renal artery stenosis and may contribute of the diagnostic accuracy of visual interpretation and other renographic diagnostic criteria.

**Keywords:** captopril renography, residual cortical activity, renal artery stenosis.

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Intravesical oxybutynin application: Ultrastructural effects on bladder epithelium.

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**Abstract:** Intravesically applied oxybutynin, rapidly absorbs into the bloodstream, additional to profound local effect. Currently morphologic effects of oxybutynin on local bladder tissue relatively well established at light microscopic level, but not ultrastructural level. Thirty New Zealand White female rabbits were catheterized daily and intravesical instillation were performed with whether 1mg/kg oxybutynin solution or saline for 30 days. The local effects of the drug on bladder epithelium at electron microscopic level were examined comparing with saline administration. Urinary tract infection (UTI) incidence were similar in both saline and oxybutynin groups (9 vs. 10 of 15 animals respectively) (p>0.05). Interestingly, in 4 of 5 animals that received oxybutynin and never had UTI during the study, separation of zonula occludens intercellular junction was determined by Jeol electron microscope. This observation can explain rapid absorption of oxybutynin through the bladder into the blood stream. Oxybutynin can damage bladder surface epithelium at ultrastructural level. This effect may lead to increase absorption of it, but not result in higher incidence of bacterial infection.

**Keywords:** neurogenic bladder, chloride, children.

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