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**Tital of Thesis**

**Effects of High and Low Frequency Electromagnetic Field on some Hematological, Biochemical and Hormonal Parameter in Laboratory Female Rats**

### **Abstract of Thesis**

#### **Summary :-**

This study was carried out in the animal house of Vet. Med. College / University of Basrah. An attempt was made to know the effect of low electromagnetic field , mobile phone and magnetize water on hematological, biochemical and hormonal parameter in laboratory rats. In the present study, the animals were divided randomly into four groups, each group consists of 20 animals .The First group is the control group. the animals in this group weren't given any treatment or exposure to anything.

The second group is the Electromagnetic Field Treated. In this group, the animals were exposed to the electromagnetic field apparatus at influx density 500 gauss .The application was carried 30 min/once day/45day session.

The third group is the Mobile phone. In this group, the animals were exposed to the Mobile phone at influx density 800-2000 MHz . The application was carried 30 min/once day/45day session.

The fourth group is the Magnetize water . The animals in this group were given the water magnetics daily for duration 45 days.

The result of the present study showed the following :

When exposure the rats to magnetic field and mobile phone showed significant decreasing in RBC and PCV, and while significant increasing in Hb, MCHC, MCH and MCV in comparing with the control group. during the period of experiment (15 days).and the compare with the rest groups.

Whereas in magnetize water group no significant change RBC and PCV, and non significant increase in Hb of 30 day of experiment in compare with the control group While no significant effect in MCHC,MCH and MCV level.

When exposure the rats to magnetic field and mobile phone significant increasing in WBC count and significant increasing in Lymphocytes and MID in comparing with the control group in the during the period of the experiment (15 days) in the same period significant decreasing in GRAN.

Whereas in magnetize water group non significant decrease in WBC count of 15 day of experimental in comparing with the different periods of experimental and Lymphocytes, GRAN no significant effect in while MID no significant decrease in 30 day compare with 0 day .

Lipid profile (Cholesterol ,Triglyceride ,LDL,HDL,VLDL) showed significant increasing in the cholesterol level in the period 30, 45 days of experiment when magnetic field, mobile phone and increase in 15, 30 ,45 days in the magnetize water group when compared with the 0 day of experiment. While triglyceride level showed significant increasing in the level in magnetic and mobile in compare with control group in 45days of experiment, but significant increase in mobile and magnetize water group in compare with control group .

(HDL-c) level significant decrease in magnetic and magnetize water groups in comparing with control group in 15 days of experiment, While there was non significant effect on all groups compared to control at all other periods of the

experiment, while no significant increase (HDL-c) level in mobile groups in 15 day compare with the rest period and 0 day of experiment, and in magnetize water significant decrease (HDL-c) level in 15 day from the periods experiment compare with 0 day and other periods of the experiment.

significant increased in (LDL-c) in magnetize water in 15, 30,45 days in compared with control group also there was increase but non significant in the (LDL-c) level in mobile group in the 15 day in compare with control group. Significant increase in the (LDL-c) level in the mobile group in 45 days in compare with other experimental periods in the magnetic group the result was conducted non significant decrease in the (LDL-c) level in the 15 days of experiment in compare with 0 day and the will be increase significantly in the 30 and 45day when compare with the 15 day of experiment periods.

On the other hand increase of (VLDL-c) in mobile groups in the 30 day of experiment in compare with control group. When compare the result in the different periods of experiment result was conducted significant increase in VLDL-c in the magnetic group in the 45 day and mobile group in 30 days of experiment. While there was no significant change in the other groups in different experimental periods

In liver function (ALT,AST,ALP) showed significant increased in ALT level in Mobile groups in comparing with control and magnetic groups in period between 30 day and 45 day of experimental, but significant  $p \leq 0.05$  increased in the ALT level in the mobile group in 30 and 45 day period of experimental in compare with 0 day period.

significant increase in AST level in Mobile groups in period 30 days in compare with control group and other groups. Whereas significant increase in AST level in the magnetic group in 45day and 30 day in mobile group when the result compare with 0 day of experimental period but it was no significant compare with 0 day of experimental in the magnetize water. ALP conducted non significant effect of different group of the ALP level when compare with control group. Also decrease in ALP level in the Control, Magnetic, Mobile and Magnetize water groups in 30-45 day of experimental with 0 day of experimental.

Thyroid hormones (TSH,T3,T4) showed significant decreased in TSH in period 30-45 day of experiment compare control group while there was decrease in the other experiment groups in compare with control but this decrease was non significant. significant increase in T3 in magnetic and mobile groups in 30 and 45 days periods of experiment when compare with control group also there was increase in the T3 level in other group in same experimental period when compare with control group but this increase wasn't reach to significant level. Whereas significant increase in T4 level in magnetic and mobile groups in 30 and 45 day period when compare with control group and also when compare this results with the 0 and 15 day period.

significant  $p \leq 0.05$  increased in FSH and LH level in both magnetic and control groups when compare with other experimental groups in 30 days period and when compared this result in all groups with different experimental the result conducted also significant increase in the level of FSH in the magnetic and control groups in the 30 day period compare with 0 day period.

significant increased in creatinin level in mobile group when compare the result with control and other groups in 15, 30,45 days of experimental, In the other hand the result didn't showed any significant changes in the s.urea level in all experiment groups in compare with control group.

While result showed significant decrease in total protein levels in magnetize water group 30 days of experiment when compare the result with different experiment periods .

During this study the result of the different organs that collected (kidney, liver, thyroid gland and brain) showed obvious changes in the tissue of this organ in most of experimental groups during different experimental periods in compare with control group.