



Effect of RF radiation on animals at higher frequency

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Abstract: This study will investigate the effect of radio frequency radiation on animals at higher frequency by forming two groups test group and control group also the analysis will be done that hat measures altered from the normal one and also to find measures how we can diveret these radiation

Key words:5G: Fifth Generation,RF-EMF: Radiofrequency electromagnetic field,EPM: Elevated plus maze,OFT: Open field test,SAR: Specific Absorption Rate.

1.1 INTRODUCTION

5G is the next generation of wireless mobile networks, a technology developed by the Third Generation for the 5G (Fifth Generation) mobile network. Wireless networks support a variety of applications, such as autonomous systems and virtual reality. These diverse applications will require dense deployment of wireless networks, increasing the number of 5G base stations However, the widespread adoption of new technologies has led to increasing protests from the public which are caused by conflicting opinions about their safety, both for human health and for the environment as a whole. Radiofrequency electromagnetic field (RF-EMF), impacting on already existing natural or anthropogenic electromagnetic fields, is increasingly recognized as a new form of environmental pollution

1.2 LITERATURE SURVEY

Bouji et al. (2016) have exposed 22–24-month aged male rats to 900 MHz RF-EMR, for 1 month. They have found that RF-EMR did not induce specific cerebral functional vulnerability (in spatial, emotional memory, anxiety, and locomotor activity) to RF-EMR during senescence. Some of the commonly used strategies in testing anxiety in animal models includes elevated plus maze (EPM), open field test (OFT), and black and white box Studies by Zhang et al. (2017), in RF-EMR-exposed mice brain, revealed significant reduction in GABA and aspartic acid (Asp) in cortex and hippocampus. Mobile phone radiation of 900 MHz for 1 h/day has also induced significant changes in place preference behaviour (Narayanan et al. 2018). Additionally, Sokolovic et al.(2012) have reported that GSM mobile phone exposure 900 MHz for 4 h/day induced anxiety-related behaviour after 10 days of exposure.

SOME OF THE PREVIOUS LITERATURE REVIEWS ARE AS FOLLOWS

Three investigations examined the impact of 1800 or 2100 MHz on bladder cells of rats (Gurbuz et al. 2010; Gurbuz et al. 2014; Gurbuz et al. 2015). In these experiments, the rats were exposed to RF radiation and the bladder cell micronuclei were assayed for micronuclei in vitro. Gurbuz, et. al. (2010) exposed 6 female Wistar rats to 1800 MHz GSM-like RF for 20 minutes/day, 5 days/week for a month and assigned 6 others to a control group. Near field exposure was used to simulate cell phone exposure. Field strengths were controlled with a Narda EMR 300 meter and probe. The E-field was 4 V/m. The authors claim that because E-field values are much lower than the 41 V/m of ICNIRP, exposure is assumed to be non-thermal. However, temperature was not monitored, and those statements cannot be confirmed. RFR exposure did not increase the frequency of micronuclei in exposed rats compared with the controls. Gurbuz et al (2014) examined exfoliated rat bladder cells for micronuclei after whole body exposure (30 min/day, 6 days/week for one and two months) to 1800 MHz and 2100 MHz RF radiation. The animals were free to move in their cages during the RF exposure. The control animals were housed in their home cages during the entire experimental period without being subjected to any experimental manipulation. A vector signal generator was used to create a GSM modulated RF radiation in the experimental setup. The E-field was 17 V/m. The calculated average SAR was estimated to be 0.23 W/kg. No significant increase in micronuclei found in the exfoliated rat bladder cells was detected in cells from RF exposed rats compared to control rats. Finally in a third study, the same group (Gurbuz et al. 2015) examined the influence of RFon micronucleus formation in bladder cells of diabetic rats. They postulated that diabetes may accelerate oxidative damage in DNA molecules through glucose auto-oxidation and nonenzymatic glycation. The diabetic rats were exposed to 2100MHz RF



for 30 min/day, 5 days/week for 30 days at a low SAR (0.24 W/kg). As in previous experiments, they used a near field exposure

1.3 EFFECTS OF RADIOFREQUENCY ELECTROMAGNETIC FIELD EXPOSURE

When using electronic devices essentially electromagnetic waves are generated these waves can be absorbed by human or animal bodies the specific absorption rate SAR is a numerical expression of these absorbed waves .SAR refers to the amount of radio wave energy absorbed in units mass of human body thus capable amount of body temperature increase such heat reactions are expressed quantitatively by SAR. Explosive use of various electronics devices in modern society has inevitably led to increase continuously the chances of electromagnetic exposure. The development of wireless communication technologies such as computers and smartphones has become a necessity of modern people.as a consequence all living things on earth are experiencing environmental changes and are being exposed to artificial electromagnetic waves which have not been experienced before.

1.4 CONCLUSION

The possible biological effects of RF-EMF are not be proven due to insufficient data to provide a clear answer to possible health risks. Therefore it is necessary to study biological response to RF-EMF in consideration of the comprehensive regards to the use of various devices by individuals .

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