



# Non-Ionizing Radiation & Children's Health

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POSTER

PLATFORM PRESENTATION

## Sleep Pattern Effects In Rats With Wireless Multi-Channel Subcutaneous Electrodes After RF-EMF Exposure

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### INTRODUCTION

Sleeping is considered one of the important cognitive functions in living subjects, and it has been reported that using a mobile phone before bed time causes people to take a longer time to reach the deeper stages of sleep and to spend less time in them; interfering with the ability to repair damage or suffering from the day. This study is to examine if mobile phone RF EMF exposure at 910 MHz could effect changes in the sleeping patterns of rats.

### MATERIALS AND METHODS

Six SD rats were examined by using a blue tooth wireless on-line monitoring system. The system has a set of 6 electrodes implanted subcutaneously to the rat brain and body, taking the signals of EEG, ECG, body temperature simultaneously, and the acquired data, including different sleep phase times, sleeping durations; sleeping interruptions with before and after RF exposures, were group collected, analyzed and compared.

The rats were divided into two groups, one received an average SAR of 1 and 5 W/kg, and the other an average SAR of 10 and 20 W/kg, before and after exposed to RF EMF radiation for a period of 1 to 3 hours.

### RESULTS

The experiments showed that there were no significant differences on EKG signals and body temperature changes in the two groups, but with significant changes in shortening sleep durations and increasing sleep interruptions in the rat group that received the higher SAR of 1 and 20 W/kg.

### CONCLUSIONS

The study indicated that during exposure to 910 MHz mobile phone RF EMF, there is some tendency in changing the sleeping patterns, associated with a sufficiently high SAR to the rat brain. More rigorous experimental design and precise simulation SAR with XFDTD software are suggested for further exploration.