

Abstract

Author: Dr. Isabelle Lagroye
Institution: ENSCPB – CNRS, PIOM Laboratory, France

Title: Radiofrequency radiations related to mobile communication and radical stress in vivo

In recent years, because of the rapid introduction of mobile communication devices, the potential health risks associated with these technologies yield to increasing public concern.

Given the long-term use of mobile phones, concerns mostly focused on possible impacts on the development of brain tumours. However, other possible long-term adverse effects such as neurodegeneration should also be investigated.

Radical stress (oxidative and nitrogen free radicals) is known to contribute to the alteration of the cells and their membrane. This phenomenon is for instance involved in ageing and in a number of neurodegenerative diseases, such as Alzheimer disease or amyotrophic lateral sclerosis.

Since a few years, some papers are suggesting that radiofrequency radiation could play a role in the generation of radical stress in cells or animals, with however, no clear evidence of this phenomenon. This is mainly due to the lack of information on, or to possible bias in the exposure scheme.

The objective of the present project is to investigate whether radiofrequency fields linked to mobile communication can induce radical stress in the rat brain. In parallel, the experiment is designed to help determining whether elderly subjects are more vulnerable to exposure to radiofrequency fields.

The head of young adult (8 weeks) and elderly (16-17 months) rats is exposed to GSM-1800. Exposures are performed at a level compatible with mobile phone use. Rats are submitted to either a single exposure, with exposure lasting only two hours, or a sub-chronic exposure in which the animals are exposed for two hours per day, five days per week, during four weeks. Controls (positive and negative) are included in the experiment.

The presence of radical stress markers at the level of DNA, proteins and lipids will be detected in brains in a blind manner after samples coding. A comparison between a single and a repeated exposure schedule will be made, as well as a comparison with another signal for mobile communication, the UMTS signal. Also, the data to be obtained will be discussed in light of the results obtained using other stress and inflammation parameters.

The present study will allow determining whether exposure to GSM-1800 signals affects radical stress in the brain of rats, and thus could be involved in ageing and/or neurodegenerative diseases.