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POSTER

PLATFORM PRESENTATION

Thermal effects of mobile phone RF-fields on children: a provocation study

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Scientific experimental data on thermal effects of radiofrequency (RF) fields to the head and neck area of adolescents and children are scanty. It is well-known that the increase of brain temperature affects strongly on the human physiological balance. The central nervous system (CNS) is effectively protected against external heat load, whereas the brain cells are sensitive to heat stress. The exact brain temperature can be measured only in special cases. Modern techniques, however, allow us to gather information on CNS thermal balance by connecting physiological signals from head and peripheral areas of the body.

The issue of whether children are especially sensitive to exposure to RF fields from mobile phones has been included in the priorities of the WHO RF research agenda. There are scientific data indicating differences in the absorption of RF energy in the heads of children and adults. In our study, we aim to provide information on possible changes in the thermal balance of children's head area and body during and after exposure to RF fields. The study subjects were 14-15 years old boys exposed to RF fields from GSM phones using double-blind sham-controlled test design with a computer controlled exposure system. The study group size was 25 individuals.

The volunteer studies were carried out at a thermal laboratory with controlled environments (+26°C and 30 % relative humidity). The differences in body facial temperature were recorded by infrared (IR) camera, and information on blood circulation in brain was collected by near-IR spectroscopy (NIRS). Modern sensitive pletysmographical methods were used to indicate effects on the regulation mechanisms of the vascular system. The temperatures were monitored with two probes in both ears and with 18 different probes on the skin. The study protocols were approved by the Ethics Committees of the Hospital District of Helsinki and Uusimaa, Helsinki, Finland.

The volunteer tests were finished at the end of January 2011. The measurement data will be analysed by the end of April 2011, and the results will be presented at the Conference.

The project is a part of a Finnish national research programme on mobile phones and health, titled "Wireless communication devices and human health (WIRECOM)". The programme is coordinated by the Finnish Institute of Occupational Health (FIOH) and jointly funded by the National Agency for Technology and Innovations (TEKES) and telecommunication enterprises.