Abstract EFAS/DGA 2007

Effects of exposure at UMTS electromagnetic field on human hearing

Sliwinska-Kowalska, M. (1), Zmyslony, M. (1), Politanski, P. (1), Bak, M. (1), Kotylo, P. (1), Woznicka, E. (1), Thuroczy, G. (2), Ravazzani, P. (3)

(1) Department of Physical Hazards, Nofer Institute of Occupational Medicine, Lodz, Poland
(2) National Centre of Public Health “Fredesic Joiliot-Curie”, National Research Institute for Radiobiology and Radiohygiene, Budapest, Hungary
(3) Instituto di Ingegneria Biomedica, Consiglio Nazionale delle Ricerche, Milano, Italy

e-mail: marsliw@imp.lodz.pl

In the last decade the European public concern was growing on the potential adverse health effects due to the use of mobile phones. Universal Mobile Telecommunications System (UMTS) is an advanced technology that differs from GSM in frequencies and patterns used (about 2 versus 0,9-1,8 GHz and code-division multiple access SDMA versus time-division multiple access TDMA). This study is a part of the European exploratory project on the potential health effects of UMTS phones on the hearing system.

Forty young volunteers (20 males and 20 females), aged from 18 to 30, with normal hearing were recruited. Their better ear was tested with pure-tone audiometry (2-dB steps), distortion product otoacoustic emission (DPOAE; DP-gram and I/O function at 2 and 4 kHz), click-evoked auditory brainstem response (ABR), contralateral suppression of transient-evoked otoacoustic emission (CAS effect on TEOAE), and cognitive event related potential - wave P-300. Audiometric evaluation was performed before and after 20 min. exposure to real-life-like mobile phone activation (Nokia 6650).

Crude analysis of the data did not reveal statistically significant differences between the two test parameters in any of audiometric tests.

Acknowledgment
The study was supported by the project “Exposure at UMTS electromagnetic fields: study on potential adverse effects on hearing” (EMFNEAR), under the programme 2003-2008 Improving information and knowledge for the development of public health; agreement No 2004127; Coordinator Paolo Ravazzani.