Annexe R

Compte rendu

2000 - BEMS Bioelectromagnetics Society (Munich, Germany), pages 288-289

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St. Louis, MO, USA 2mg/ml dissolved in dimethyl sulfoxide) was added to give a final concentration of 6 µg/ml. At the end of the culture period cultures were harvested, slides were scored at 1000× magnification and *MN* frequency was evaluated as the ratio between *CB* cells presenting *MN* and the total number of *CB* cells scored.
RESULTS AND CONCLUSIONS: The results obtained by comparing bovine cultures from each rearing with the control group did not show statistically significant differences. The data were analysed by t-Student test. The results here reported are particularly interesting taking into account the higher genotoxic sensitivity of cattle lymphocytes respect to human once (Scarfi et al., 1996). Due to the biological and economical relevance of this species and the large diffusion of electromagnetic sources, our study is will be extended by considering aspects related to fertility and reproduction.
We wish to thank Dr. Comentale and Dr. De Lorenzo from APA of Salerno and Avellino. This work was supported by P.O.P. Regione Campania, misura 5.4 grant to M.R.S.

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CORTISOL ALTERATIONS OBSERVED IN MICE PLACED IN FRONT OF A COLOR T.V SCREEN : A PARALLEL STUDY WITH A PROTECTIVE EQUIPMENT. L. Bonhomme-Faivre[1], R. Santini[2], S. Orbach-Arbouys*[1]. [1]Service Pharmacie, Laboratoire de Pharmacologie [2]Institut National des Sciences Appliquées, Laboratoire de Biochimie-Pharmacologie, 20, Avenue Albert Einstein, 69621 - Villeurbanne Cedex - France.

INTRODUCTION: In order to evidence cortisol modification after TV exposure, we placed mice in front of a television screen. We present here evolution of cortisol value in exposed Swiss mice compared to those of unexposed mice and to exposed mice protected by a techno AO electromagnetic bioprotective technology. The device is an autonomous magnetic oscillator (8-12 hertz ; 100-150 lF made of double antenna filled with an electromagnetically treated saline solution.
MATERIAL AND METHODS: 4 week old Swiss male mice (n=9) were placed at a distance of 20 cm of a TV screen (Waltham 230 V, 50 Hz, 35 cm diagonal screen), 5 days/week, 9 ± 2 h a day during 106 days, in transparent plastic 21x14 cm cages (2 cages). Another group (n=9) was placed in the same conditions with the techno AO EM compensation equipment. Measurement of the magnetic field strength was performed with a Mag check 50+ USA. The magnetic field was spatially homogeneous within the cage. The magnetic field was 0.8 µT in front of the cage and 0.23 µT its back. TV was left on stand by after exposure (0.03 µT). The control group (n=9) was placed in another room under identical light, noise and temperature conditions except for the magnetic field which was below 0.01 µT. The geomagnetic field in the exposure room was 572 milliGauss (Geo-magnetometer BPM 2001 Bio-physic Mersmann D5471 Wassenach). The light value was 400 lux (lux-meter LX 101. Bioblock France). The electric field at 50 Hz was 30 V/m in the center of the cage for the exposed groups and 3 V/m for the control group. (EFM 130 Electric field measurement Stockbridge MA 01266 USA). Serum cortisol levels were determined at 8h AM by the fluorescence immunopolarization technique (TDX, Abbott Rungis France) on days 21 and 106. All data are given as means ± standard deviation for each group. Analysis of differences between groups on a given day was done using Student's t test. $p<0.05$ was considered as significant.
RESULTS: On day 21 : (when mice were 7 weeks-old) no significant difference in cortisol value was observed in the three groups. On day 106 : after 3 months exposure, we observed a significant fall in cortisol value in the exposed group as compared to control or exposed protective mice.
CONCLUSION: Several studies have shown a decrease in cortisol values after exposure to ELF. It could be objected that light from the TV screen could have had an influence on cortisol secretion. It seems however more likely that the effects on cortisol are due to EMF since it has already been reported (1,2) and since cortisol is not diminished in antenna protected mice placed under day light.

CORTISOL VALUE ng/ml

	DAY 21	DAY 106
CONTROL	5.9 ± 3.5	35.5 ± 14.8
EXPOSED	10.7 ± 5.4	15.4 ± 10.5[1,2]
EXPOSED-PROTECTED	8.9 ± 4.9	31.6 ± 19.9

Student's t test : $p<0.05$: 1 - compared to control, 2 - compared to exposed protected.

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TERATOLOGICAL RESEARCH ABOUT THE INFLUENCE OF STATIC ELECTROMAGNETIC FIELDS ON THE PRENATAL GROWTH OF NMRI-MOUSE. H.J. Wagner[1], J. Gatzka[2], N. Miosge[1], F. Odoj[2], A. Haase[1] and R. Herken[2]. [1]Lehrstuhl für Experimentelle Physik (Biophysik), Bayrische Maximilian Universität, Würzburg. [2]Zentrum Anatomie, Abteilung Histologie, Georg-August Universität, Gottingen, Germany.

OBJECTIVE: The nuclear magnetic resonance imaging (MNRI) is a clinically established method for non-invasive picture signals, whose teratogenic potential in contrast to ionizing radiation has neither been proved nor disproved so far. An essential parameter for the resolving power of the MNR-picture is the power of the used static magnetic field, which is usually between 1 and 2 Tesla (T) in clinical routine.
The future developments of nuclear magnetic resonance tend, though, to increase this power of the static magnetic field additionally.
METHOD: In order to realize a possibly teratogenic power of static magnetic fields, pregnant NMRI mice in groups of four animals each were exposed on the 8th, 9th, and 10th day of pregnancy to static magnetic fields with a field strength of 2 T and 7T. The exposition was carried out during night and always lasted 4 hours.
Simultaneously a group of control mice was placed into a dummy magnet. The dams were killed off on the 18th day of pregnancy, the foetus were taken out of them and teratologically treated (brightening of skeleton, Wilson cuts, histology).
RESULTS and DISCUSSION: A significant difference in the rate of mortality, rate of resorption and frequency of occurred deformities couldn't be realized, neither with the animals exposed to 2 Tesla nor those to 7 Tesla, compared with the control test animals. As a result it seems that static magnetic fields of this order of magnitude produce no teratogenic effects, with pregnant mice at least.
This study is funded by the "Bundesarnt für Strahlenschutz" (St. Sch. 4141).

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CHANGES IN NON-SPECIFIC IMMUNITY IN MICE AFTER A WHOLE BODY EXPOSURE TO LOW-INTENSITY EXTREMELY-HIGH-FREQUENCY ELECTROMAGNETIC RADIATION. A.B. Gapeyev*[1], M.P. Kolomyceva*[1], V.B. Sadovnikov*[2], N.K. Chemeris*[1]. [1]Institute of Cell Biophysics of Russian Academy of Sciences, Pushchino, Moscow region, 142292, Russian Federation. [2]Branch of MM Shemyakin and YuA Ovchinnikov Institute of Bioorganic Chemistry of Russian Academy of Sciences, Pushchino, Moscow region, 142292, Russian Federation.

Application of EHF-therapy for diagnostics, prevention, and treatment of a broad spectrum of diseases is based on empirically obtained data and is poorly confirmed by the knowledge of interaction mechanisms of extremely-high-frequency electromagnetic radiation (EHF EMR) with the organism of animals and humans.