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DE PROTECÇÃO CONTRA RADIAÇÕES

IV CURSO DE PROTECÇÃO CONTRA RADIAÇÕES

VIII JORNADAS PORTUGUESAS DE PROTECÇÃO CONTRA RADIAÇÕES

Colaborações Científicas:

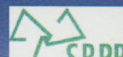
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Colaborações Científicas:



Patrocínios:



Pilot study to evaluate the viability of chicken embryos exposed under non-ionizing radiation emitted by GSM base stations

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Introduction

Previous experiments performed in our laboratory demonstrated that continuous exposure of chicken embryos under 900 MHz GSM cell phone radiation during embryonic life (21 days) was associated with increased mortality (Youbicier-Simo et al., 1998; 2000). Base transceiver stations (BTS) are the first link of the complex network through which cell phone users communicate with each other. Information exchange between cell phones and BTS is bi-directional and is supported by microwaves pulse modulated at extremely low frequencies (ELF). Therefore, an interesting issue is whether BTS radiation can affect biology in the same way as cell phone radiation does.

Aim of the study

A pilot study was carried out to evaluate the sensitivity of chicken embryos to BTS radiation.

Materials and methods

A commercial BTS for 900 MHz GSM cell phones was installed in the incubator and was connected to an amplifier, itself wired to a relay antenna placed on the roof of the laboratory. Microwaves power over the platform supporting incubated eggs ranged from 25-60 V/m. Freshly-hatched chicken eggs without cracks (T451NI strain, SASSO Co., Sabres 40, France) were purchased from SICAMEN hatchery (Baudrières 71, France). Two groups of eggs were incubated under 37 ± 0.5 °C, 55 ± 5 % relative humidity and permanent darkness (except during candling) for 21 days. The assay group (n = 108) was exposed under BTS radiation continuously throughout the experimental session (21 days). The control group (n = 100) was not exposed. Embryonic mortality was evaluated at 2-day intervals from 3 to 13 days of development (ED3-ED13) and on the day of hatching (ED21).

Results

In the control group, embryonic mortality was low (4 dead embryos) from ED3 to ED13 and slightly increased (up to 8) from ED13 to ED21. On the other hand, in the BTS-exposed group, embryonic mortality was higher than in the control group, and rose increasingly throughout the exposure period (24 from ED3 to ED13 and 34 from ED13 to ED21). Overall mortality in the BTS-exposed group was 5 times higher than in the control group (78,5 % vs. 15 %). The distribution maps of EMF power and embryonic mortality were not correlated.

Conclusion

Together these findings indicate that under chronic exposure, BTS radiation was toxic for chicken embryos. This study was the first to show that BTS radiation can induce biological effects. Besides, present results are in line with previous data obtained in our laboratory demonstrating that under chronic exposure to 900/1800 MHz GSM cell radiation, the mortality of chicken embryos was higher than in controls (58-75 % vs. 11-16 %).

References

- BJ Youbicier-Simo, JC Lebecq, M Bastide. Damage of chicken embryos by EMFs from mobile phones: protection by a compensation antenna. Abstract of the twentieth Annual Meeting of the Bioelectromagnetics Society, St Pete Beach, Florida, USA, June 7-11, 1998.
- BJ Youbicier-Simo, JC Lebecq, G Jean, M Bastide. Mortality of chicken embryos continuously exposed under GSM cell phone radiation and validation of the effectiveness of a protective device. International Conference on Cell Tower Siting, Salzburg, Austria, June 7-8, 2000.