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**ABSTRACT "SPIN"**

Protective effects induced by a mixture of minerals called Geolux (MIXOS), active component of a biomaterial device named "SPIN", with regard to the damage caused by radiation of different nature and intensity on single and multi-cellular organisms

**Emar Research**

"Emar Research and Biomedical Applications" was founded in 1994 as foothold to a group of researchers committed to exploring and testing the interactions among electromagnetic fields of different nature, focusing for the most part on the electromagnetic energy generated by animal organisms. Every day, environmental conditions are subject to changes that may be too rapid for the natural adaptation of the cells forming all living beings. Our main mission is to harmonize the "dance of the elements." Two equal and opposite electromagnetic fields tend to offset and merge, thus yielding a new state of the matter. The solution is to render possible the osmosis of apparently incompatible principles, harmonizing what is harmful by generating an equal and opposite field capable of neutralizing any deleterious effect.

**After years of laboratory studies: our solution**

Electromagnetic radiation is produced by a variety of sources (appliances, computers, mobile phones, radio repeaters, etc. ...), resulting in various forms of electromagnetic unbalance in animal bodies. Such side-effects have a detrimental influence on cellular functions in living organisms. In particular, the production levels of so-called free radicals and oxygenation dynamics within cell membranes become the target. SPIN by contrast, emits pulsating electrical micro-fields (4 / 16 millimicrons) with frequencies akin to the electromagnetic field ideal for animal cells. Such action is determined through a realignment process of the frequencies (virtuous effect) defined as "overwrite", over the electromagnetic distortion caused by different radiation sources. The positive result is a highly significant reduction of biological damage due to improper ratios of oxidation, as well as the improvement of cell membrane oxygenation activity. Going deeper, it appears that exposing an individual to "protective" electromagnetic frequencies generated by SPIN, there is an evident improvement of cell mitosis functions, thereby initiating a process of progressive regeneration of the cells themselves.

A series of tests were set up, aimed at evaluating the protective effects induced by the mixture of minerals called GEOLUX (MIXOS), the active component of "Spin", with regard to the damage caused by radiation of different nature and intensity on single and multi-cellular organisms.

**Three different types of experiments were carried out:**

1. Evaluation of the protective effect against cellular oxidative stress induced by exposure of the animal, a rat, to GSM 900 MHz electromagnetic fields (M. Ammari et al., Toxicology, 2008, 250, 70 - 74, F. Ozguner et al. , Mol. and Cell Biochem., 2006, 282, 83)

2 . Evaluation of the protective effect against damage caused by exposure to bacterial microorganisms UV - 270 nm. (BD Davis, R. Dulbecco et al., Treaty of Microbiology, 1981). As micro-organisms for the study strains of ATCC Gram + were used, frequently found in the skin

Evaluation of the degree of protection against damage at microorganism's DNA level.

3 . Evaluation of the protective effect against the killing of environmental microorganisms caused by UV - 270 nm as a protection index of symbiotic cutaneous protective bacterial biota.

Here are the results for the 2nd test related to the evaluation of the protective effect against UV - 270 nm radiation on Gram + single-cell microorganisms taken as a prototype study.

**The results unequivocally show that the presence of "SPIN" in contact with the bacterial culture provides protection for the microorganism from the bactericidal effect caused by UV exposure.**

**The level of protection is represented by an increase of the microorganism's growth rate superior to eighty percent (> 80%).**
**The culture growth speed also increased significantly by more than 260%.**

**This data substantiates an utterly significant protective effect induced by "SPIN" against cellular damage caused by UV light on Gram + bacteria taken as a case study**.

**Determination of the protective effects resulting from the use of filters enclosing biomaterials (SPIN) on the oxidative stress damage in the animal central nervous system and electromagnetic radiation exposure**.

In recent years there has been extensive controversy over the biological effects of electromagnetic radiation (EMR ) and its consequences on health. Emerging experimental data indicates that EMR, such as that produced by GSM 900MHz mobile phones, have a significant impact on cell biology and ultimately on human health for being capable of increasing the presence of free radicals, with consequent induction of oxidative stress and possible damage on major organic constituents of the cell, such as proteins, lipids and nucleic acids.

State-of-the-art features reveal the damage in rat's brain cells by subjecting it to electromagnetic field (EMR) exposure for differing lengths of time (12 and 24 hours) at head level, a phenomenon similar to the use of mobile phones (900 MHz - 4Wkg SAR-1).

Cell damage, expressed as oxidative damage of brain proteins, has been quantitatively assessed by different parameters, all representing the index of intensity as:

- carbonyl groups (DPNH)
- hydroxynonenal (HNE)
- SH-groups (HS).

To have a fair indication of uniformity and extent of the harm done, the quantitative parameters were evaluated in different tissues of the central nervous system (cortex, hippocampus, striatum, cerebellum).

The experiment consisted of :
groups of rats that were thusly treated:
- a CHECK group not exposed to electromagnetic fields
- two groups exposed to electromagnetic fields, for 12 and 24 hours respectively
- two groups exposed to same electromagnetic fields and for the same time but with interposition, between the electromagnetic source and the animal cage, of a protective barrier formed by the product in question (Spin).

*Results:*

***1. Extent of cellular damage:***

***Under these experimental conditions of electromagnetic stress, cell damage is statistically significant compared to CHECK group (p <0.05). The extent of damage is directly proportional to the time of exposure.***

***2 . Degree of protection***

***Cell damage is prevented to a statistically significant degree (****greater than 95% protection****) by interposition of the "****Spin barrier****" between the source of the electromagnetic field and the animal.***

*The degree of protection is virtually absolute, as evidenced by the superposition of HNE and DPHN values found at various tissues' levels of CHECK animals (not exposed to EMR) and animals exposed to EMR in presence of "SPIN."*
*Protection is also maximal in case of a longer exposure time (24h).*

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