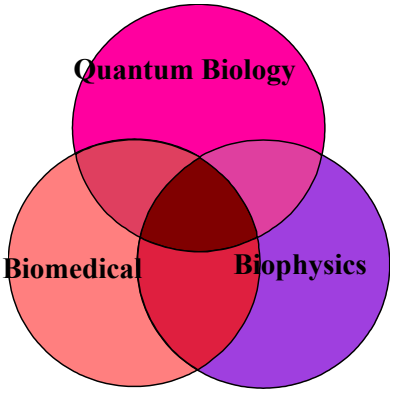

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EARTHCALM'S INFINITY HOME EMF PROTECTION SYSTEM REVERSES THE HARMFUL BIOLOGICAL EFFECTS OF HOME ELECTRICITY AND WIFI RADIATION

ABSTRACT

A statistically significant inhibition of the electrical properties of human DNA has been observed when DNA is exposed to three different EM environments. The home electrical grid and WIFI radiation inhibits the electrical conductivity of DNA. Combined the inhibition is even larger. After obtaining resonance conditions to demonstrate this detrimental effect of home electricity and WIFI radiation, these same conditions were used to measure the influence of the Infinity device.
The Infinity device was highly effective at completely reversing the inhibitory effects of all EM environments tested, even though it was plugged in a socket in an adjacent room. The neutralized EM environments had the same effect on DNA as did control DNA placed outside the laboratory in the natural geomagnetic field.

I. INTRODUCTION

Outside power lines feed the home electrical grid generating home electricity which emit an electromagnetic (EM) field with a frequency of 60Hz. Numerous scientific studies have demonstrated such low frequency EM fields are harmful to the body. After cell phones, home electricity has been most studied in regards to its detrimental effects on the body. Home electricity appears to have a universal effect on nearly all biological systems tested to date. It also appears that many basic biological systems are inhibited including the cardiovascular system (Bezdolnaia, 1990), the immune system (Robert, 1993), increased incidence of brain tumors (Li, 2003) and leukemia (Bianchi, 2000) and birth defects (Robert, 1993). In some cases the mechanism of action is also known down to the individual biomolecules that mediate the damaging effects (Simko, 2004).

WIFI radiation oscillates at 2.45 GHz, a much higher frequency than low frequency radiation from home electrical grids. In fact the two are at opposite ends of the spectrum. Nonetheless, the body responds to both sets of frequencies. Although fewer scientific studies have investigated the biological effects of WIFI radiation, it is apparent that this radiation is also harmful to the body. Although there is no direct evidence that this radiation causes cancer, it increases the efficacy of some tumor promoters (eg.TPA) (Balcer-Kubiczek and Harrison, 1989). WIFI radiation also increases the permeability of

the blood-brain-barrier, thus allowing entry of neurotoxins from the peripheral circulation into the brain (Neubauer, 1990). Another study clearly showed abnormalities in the cells which line the cornea, thereby having a detrimental effect on vision (Kues, 1995). Like 60Hz home electricity (Blank, 1997), WIFI radiation also interacts directly with DNA. In one study, WIFI radiation was shown to alter gene expression in 221 genes after only a two-hour treatment. Longer exposures increase the number of altered genes. One of these genes which is activated (upregulated) causes cell death (Lee, 2005).

Radiation emitted from smart meters falls in a frequency range between home electricity and WIFI, typically oscillating at 900 MHz. Smart meter radiation is rarely studied for its biological effects, despite the enormous public back lash concerning privacy and health issues. Although people are only exposed to this radiation for a few minutes at a time, some power companies take as many as three readings per day. Therefore the accumulated dose can be significant. Doses at one foot from the meter are similar to those emitted from WIFI devices (about 10 uW/cm2). Electromagnetic hypersensitive individuals report increased dizziness, fatigue, and headaches (Barringer, 2011). One scientific study demonstrated that long-term intermittent exposure to 900 MHz, in cancer-prone mice, caused an increased tumor incidence for lymphoma **(**Repachol, 1997).

The public safety aspect of electro-pollution (includes all types of EM fields) is now recognized on a global level (Hardell, 2008). Several commercially available products claim to reduce electro-pollution by protecting the body from harmful radiation. Most studies, however, lack rigorous scientific testing. Rigorous scientific studies, however, indicate that some of these technologies can reverse the harmful effects of man-made radiation of living systems in-vitro (Farrell, 1998; Goodman, 2002; Syldona, 2007).

The purpose of this study was to evaluate the ability of Earthcalm's Infinity Home EMF Protection System (the Infinity device) to reverse the harmful biological effects of radiation from home electrical grids, WIFI radiation and smart meter radiation. Human DNA was chosen as the biological target because previous studies have shown that it resonates with and is altered by a variety of classical EM fields (Blank, 1997; Borhani, 2011) as well as non-classical energy fields (Rein, 1995, Rein, 2003). Electrical conductivity of DNA was chosen as the biological endpoint because the electrical properties of biomolecules correlate well with their physiological properties in-vivo and electrical properties are highly sensitive to environmental EM fields. Measurements were taken on DNA exposed to ambient EM fields in the natural environment, DNA exposed to home electricity, DNA exposed to home electricity and WIFI radiation and finally DNA exposed to home electricity, WIFI radiation and smart meter radiation.

A. Electrical Conductivity of Human DNA

Electrical conductivity of biomolecules has now been correlated with their well-established physical and chemical properties and their functional role in a variety of biological systems including the human body**.** Electrical conductivity of electrons, protons and other subatomic particles has now been well characterized and demonstrated to occur along the central axis and across individual strands of the DNA helix (Bakhshi,

1994; Fink, 1999). Furthermore, such conductivity measures correlate well with DNA repair, one of many functional properties of DNA. Thus, increasing conductivity is associated with increased ability of DNA to repair itself (Retel, 1993). Furthermore, repaired DNA has 20-fold higher conductivity than damaged DNA (Hartzell, 2003). Increased conductivity of DNA has also been measured during its self-assembly from component parts into an intact DNA helix (Lintao, 2000). In contrast, large decreases in conductivity are associated with mismatched DNA strands (Hihath, 2005). Thus, any treatment which increases electrical conductivity can be considered beneficial to the body.

There are numerous methods available to measure the electrical conductivity of DNA in-vitro. One method for measuring electrical conductivity of biomolecules like DNA is to electrically excite DNA (at different amplitudes and frequencies) and measure the response as induced current or voltage. These current-voltage techniques are used in several types of commercially available spectrophotometers, including dielectric spectroscopy.

Scientific studies using these techniques have demonstrated that subatomic particles can travel through the DNA helix at varying rates, a process known as charge transfer. Depending on its chemical and physical properties, its external environment (i.e. solvent properties), and the excitation conditions used in the measurements, charge transfer can occur via a slow, multi-step electron hopping mechanism or via a fast superconductive mechanism. Specifically, under resonance conditions, intrinsic energy fluctuations within the DNA molecule cause electron decoherence and charge transfer processes occur via a one-step coherent superexchange (Xin-Qi 2001). This superconductive process is believed to occur via a quantum tunneling mechanism (Zikic, 2006). Thus, the electrical conductivity of DNA can either occur as a classical (ohmic) multi-step, incoherent hopping process or via quantum tunneling. Nonetheless, the exact experimental conditions which allow quantum tunneling are unknown.

B. The Quantum Biology Research Lab's (QBRL) Methodology

The QBRL has developed a method for measuring the electrical property of biomolecules by applying weak voltage spikes at varying amplitudes and various frequencies and then measuring the induced current response in nanoamps. The standard current-voltage measurement technique was modified using proprietary methods to increase the likelihood of measuring non-ohmic, quantum behavior behavior (eg. quantum tunneling of electrons as they propagate through the DNA molecule). This is achieved in part by taking experimental measurements under resonance conditions. Resonance conditions for the interaction of EM radiation and biological systems is complex and are here measured by 'trial-and-error' experiments. As a result of this complexity and the quantum nature of electron propagation along DNA, a phenomenon called 'frequency jumping' or 'frequency hopping' occurs (Plakhotnik, 1997). Due to the presence of frequency hopping, after excitation some measurements did not show a significant current response relative to the baseline. Therefore, instead of calculating the magnitude of the current response, as is typically done, percent occurrence values were calculated for each

excitation condition as the number of current responses divided by the total number of measurements (ie. how often the response occurs). This novel technique has previously been used at QBRL to characterize the electrical properties of human DNA in response to a wide variety of classical and non-classical EM fields, including cell phones, computers, home electricity and WIFI. In all cases an inhibition of electrical conductivity was observed.

II. EXPERIMENTAL PROTOCOL

The specific protocol that was followed involved making a stock solution (1mg/ml) of human placental DNA (Sigma Chemical Co., St. Louis) in deionized (DI) water. The stock solution was then diluted to various concentration in DI water. The same stock solution of DNA was used for all experiments but different aliquots for each measurement. The same bottle of DI water was used for all experiments. The electrical properties of DNA were measured using a standard potentiostat (Gamry Instruments, Philadelphia, PA) which generated an excitation voltage (10 - 40mV) modulated at various frequencies (10 -100 kHz) which was fed into the input gold electrode. The output current was detected by a second platinum (receiving) electrode, where the two electrodes were separated by a distance of 2mm. Both electrodes were immersed in the diluted DNA solution in a small measuring chamber. For each experimental condition 12-14 sequential measurements were made over the course of fifteen minutes. Percent occurrence values are presented for each experimental condition in the Figures below.

Controls were measured first, where the diluted DNA samples, in a small glass vial, were left outside for the entire treatment period at least 50 feet from the laboratory building for exposure to clean environmental EM fields. For evaluating the different experimental conditions, DNA samples were placed in the exact same location in the laboratory. The experimenter was not present during DNA exposure to any of the following conditions. The experimental conditions correspond to different man-made EM environments which included:

1) Home electricity:
   In this case DNA samples were exposed to 60Hz EM fields generated from the electrical mains common to all buildings. This can be considered background radiation since we are all continuously exposed to these EM fields when we are inside. No computer was turned on anywhere in the lab during these exposures.

2) Home electricity + WIFI radiation:
   Here EM radiation was generated from a Linksys Cisco router directly connected to a Dell laptop computer connected to the internet. The DNA sample was 10 feet from the computer and the router which were six inches from each other.

3) Home electricity + WIFI + smart meter radiation:
   The DNA samples were exposed to the exact conditions described in condition #2 but at a different time of the day corresponding to the time when a smart meter reading was being taken (time window defined by local power company).

After measurements were taken on DNA exposed to these three experimental conditions, the experiments were repeated under the same experimental conditions 24 hours after inserting the Infinity device into a socket in a different room in the laboratory. In all treatment and control experiments the exact same measurement procedure was followed.

The following 'experimental variables' were used to find resonant conditions:

a) dilution of stock DNA (1/10 to 1/50)
b) different excitation voltages (from 10-40 mV)
c) different excitation frequencies (10-100kHz)– 36 different frequencies were tested
d) different treatment times (45 - 80 minutes)

Different experimental variables were required for each experimental condition in order to obtain resonance. When resonance conditions occur, the EM fields in the environment produced a large spike in the current response after excitation. For all three experimental conditions, under resonance conditions, a large decrease in conductivity was observed relative to the control values.

III. DATA ANALYSIS

Due to the phenomena of frequency hopping, the current response to a given excitation condition was highly variable. More consistent data were obtained when, at a given excitation, the total number of current spikes was determined and the percent occurrence calculated. Percent occurrence values can be considered raw data. Percent occurrence values are used in all Figures below. This raw data was then used to calculate differences between the different experimental values. Difference values are presented in the Table 1.

Using separate aliquots (portions) of the stock DNA solution, the three identical samples were measured as described above after sitting on the lab bench for sixty minutes. Such measurements allow the determination of the experimental error, since the standard deviation of the three independent measurements can be calculated (ideally all three should be the same). Statistical significance was determined from the standard deviation values using a technique called 'margin of error' analysis. Two sigma - 2σ (twice the standard deviation) – values represent the "margin of error". The experimental error (twice the standard deviation) was calculated at 10-13%. Any experimental values greater than the margin of error can be considered to be statistically significant at the 95% confidence level ($p=0.05$). In Figure 1 and Figure 2, error bars (2σ) which do not overlap indicate two values are statistically different from each other.

IV. RESULTS

Varying the amplitude and frequency of the excitation signal and changing the experimental variables stated above, usually resulted in current responses similar to those of the controls (DNA outside the building). However, when resonance conditions were met, the three EM environments produced a large inhibition of DNA conductivity. This

inhibitory effect was statistically significant in all three environments because the error bars for the first two columns in all three figures do not overlap.

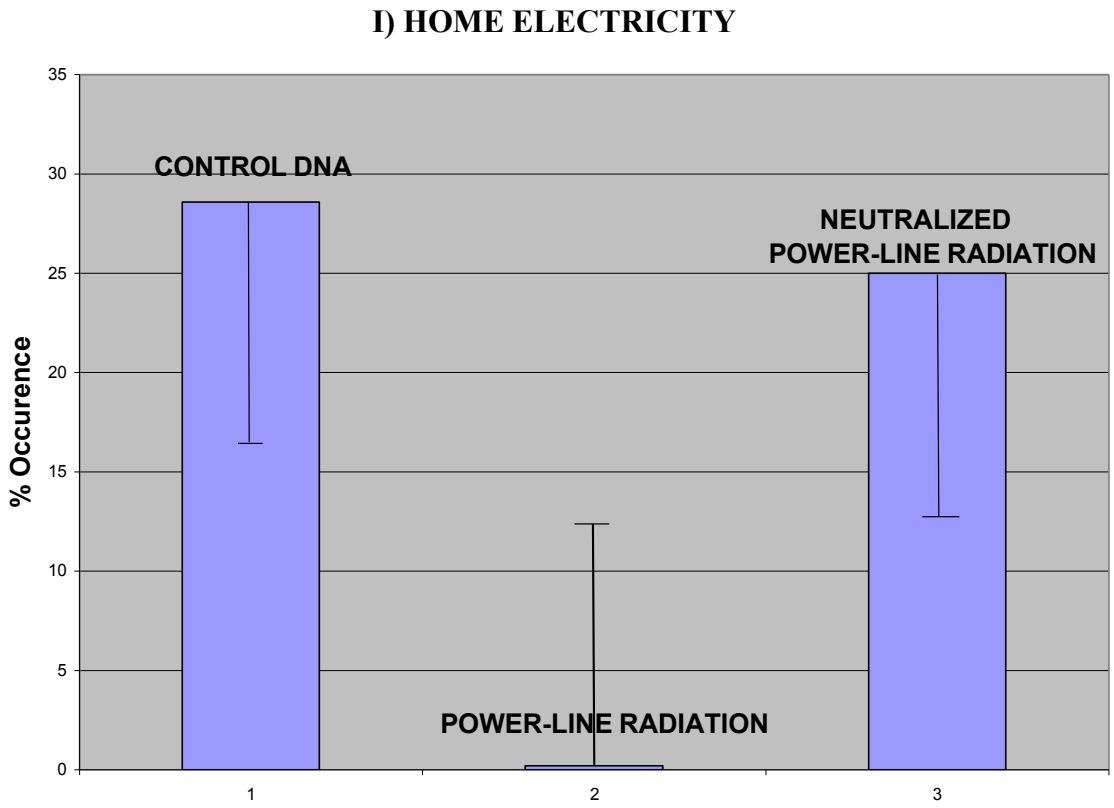

Figure 1: Home electrical grid with and without the Infinity device. Excitation conditions: 15mV, 4.46 kHz, an exposure time of 70 minutes and a DNA dilution of 1/15.

Under the excitation conditions described in Figure 1, the home electricity caused a statistically significant decrease in the electrical conductivity of human DNA when compared with DNA in the natural environment outside the lab. When the experiment was repeated after plugging in the Infinity device to a wall socket in a separate room, the home electricity in the experimental room no longer produced an inhibitory effect on DNA. Because the error bars in column 1 and 3 do overlap, we can conclude that there is no statistical difference between control values (28%) and those obtained in the neutralized EM environment (25%). Therefore we can conclude that the Infinity device completely reversed the inhibitory effect on DNA produced from home electricity.

2) HOME ELECTRICITY + WIFI RADIATION

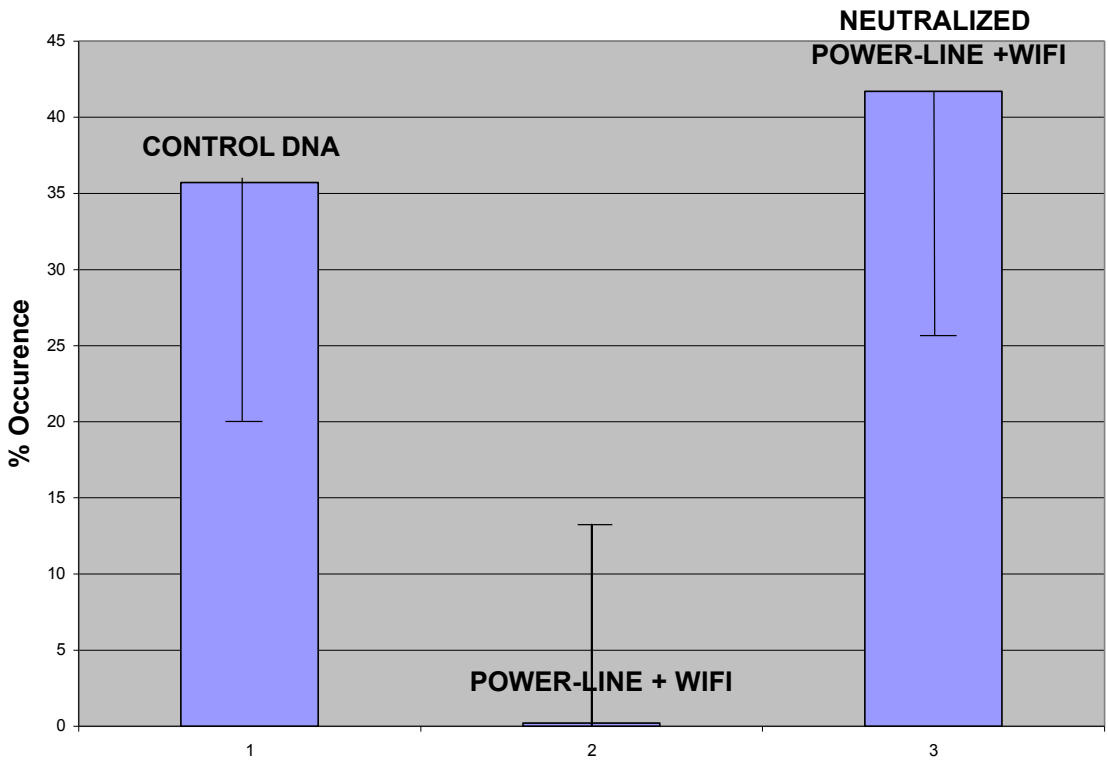

Figure 2: Home electrical grid with and without the Infinity device. Excitation conditions: 20mV, 7.08 kHz, an exposure time of 60 minutes and a DNA dilution of 1/10.

Under the excitation conditions described in Figure 2, the home electricity combined with WIFI radiation caused a statistically significant decrease in the electrical conductivity of human DNA when compared with DNA in the natural environment outside the lab. When the experiment was repeated after plugging in the Infinity device to a wall socket in a separate room, home electricity combined with WIFI radiation in the experimental room no longer produced an inhibitory effect on DNA. Because the error bars in column 1 and 3 do overlap, we can conclude that there is no statistical difference between control values (36%) and those obtained in the neutralized EM environment (42%). Therefore we can conclude that the Infinity device completely reversed the inhibitory effect on DNA produced from home electricity and WIFI radiation.

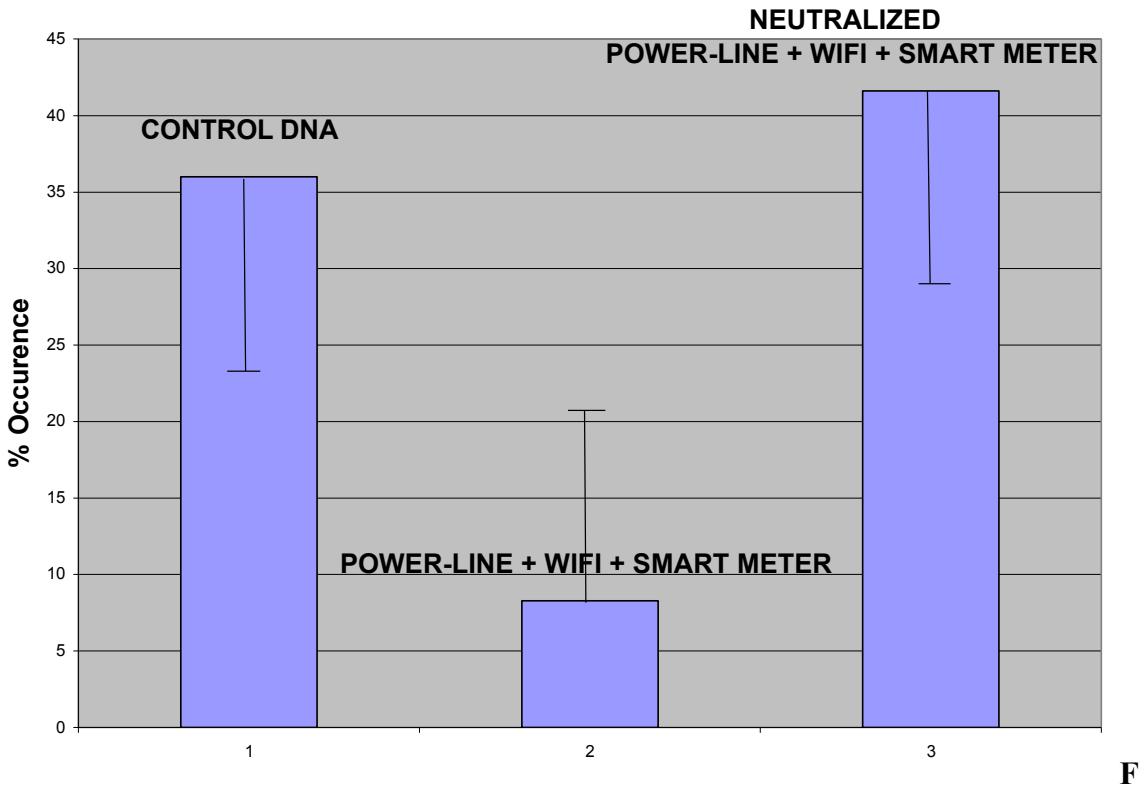

Figure 3: Home electrical grid with and without the Infinity device. Excitation conditions: 20mV, 7.08 kHz, an exposure time of 60 minutes and a DNA dilution of 1/10.

Under the excitation conditions described in Figure 3, home electricity plus WIFI radiation plus smart meter radiation caused a statistically significant decrease in the electrical conductivity of human DNA when compared with DNA in the natural environment outside the lab. When the experiment was repeated after plugging in the Infinity device to a wall socket in a separate room, the EM environment containing all three types of radiation no longer produced an inhibitory effect on DNA. Because the error bars in column 1 and 3 do overlap, we can conclude that there is no statistical difference between control values (36%) and those obtained in the neutralized EM environment (42%). Therefore we can conclude that the Infinity device completely reversed the inhibitory effect on DNA produced from home electricy in the presence of WIFI radiation or in the presence of WIFI and smart meter radiation.

DIFFERENCE VALUES		
Condition	**Cont vs EMF**	**EMF vs neutralized EMF**
60 Hz	-28.4	+24.8
60 Hz + WIFI	-35.5	+41.5
60 Hz + WIFI +smart meter	-27.7	+33.3

Table 1: Column #1-differences obtained by subtracting control values (% occurrence) from EMF exposure conditions values (% occurrence). Column #2 – differences obtained by subtracting EMF exposure condition values (% occurrence) from values obtained for neutralized EMF conditions (% occurrence).

The difference values obtained in Column 2 of Table 1 represents the magnitude of the effect of the various EM environments to inhibit electrical conductivity of DNA. The results indicate that 60Hz and WIFI produces the largest effect on DNA and that the addition of smart meter signal is somewhat less effective, similar to the effect produced by home electricity alone.

The difference values obtained in Column 3 of Table 1 represents the efficacy of the Infinity device to bring the inhibited values in column 2 back to the values obtained from untreated control DNA. These results indicate that the Infinity device is effective bringing conductivity values back to normal (control values). It is interesting that with respect to the *combination* of home electricity with either smart meter radiation or WIFI radiation, the Infinity device not only restores DNA to normal vales but shows a trend toward improving DNA conductivity over and above the controls values. In all three experiments, the neutralized EM environment (with the Infinity device) has the same non-effect on DNA as the controls. In fact DNA conductivity values obtained with the Infinity device are not statistically different from values obtained from control DNA.

DISCUSSION

The results of this study demonstrate a statistically significant effect of all three EM environments tested to inhibit the electrical conductivity of DNA. Home electricity combined with WIFI radiation produced the largest effect on DNA. Although the effect of these low-frequency and high-frequency EM environments on the electrical properties of DNA have not been reported in the scientific literature, such effects have been previously observed at the QBRL.

After obtaining resonance conditions to demonstrate the detrimental effects of home electricity and WIFI radiation on DNA, these same conditions were used to determine the ability of Earthcalm's Infinity device to reverse these effects. The Infinity device was highly effective at completely reversing the inhibitory effects of all three EM environments to the point where values obtained in the neutralized EM environments were statistically the same as values obtained from DNA outside the lab in the natural EM environment. It is important to point out that the Infinity device was placed in an adjacent room to the room containing the computer and the router. This suggests that the power grid throughout the lab was neutralized and hence all the devices plugged into the mains (a computer and a router in this case) were neutralized. This experimental observation supports the Earthcalm claim that the radiation in the entire house is neutralized.

This reversal effect is likely to be mediated by two mechanisms. Either the subtle energy emitted from the Infinity device interacts with the electrical circuits in the mains thereby making the 60Hz EM fields less damaging to DNA or the energy from the Infinity device

directly influences the DNA itself making it less susceptible to the different environmental radiation. The former mechanism is consistent with marketing claims of Earthcalm. In either case, harmful EM fields in the environment can be considered incoherent in nature and it is feasible that the subtle energy radiating from the Infinity device is coherent. Previous published studies demonstrate that biological effects of EM radiation are dependent on the ratio of coherent to incoherent energies (Farrell, 1998). Thus the addition of coherent energy from the Infinity device could make the environmental radiation less toxic.

The results of the present study also indicate that the Infinity device not only brings conductivity values back to control values, but further increases them by an additional 6% above baselines control values. Although the extra 6% is not statistically significant, this effect has been previously observed with other Earthcalm devices. Increasing conductivity of DNA is beneficial and is associated with increased ability of DNA to repair itself (Retel, 1993). Furthermore, increased conductivity of DNA is also associated with enhancing intrinsic self-assembly processes (Lintao, 2000).

It is important to point out that the DNA used in this study is highly purified (so the other biomolecules normally found in the body are absent). Nonetheless, in-vitro models, like the one used in this study, are often used in biomedical research to predict behavior in the human body (in-vivo) and the results reported here clearly indicate that the harmful effect of different EM environments is completely reversed when the Infinity device is plugged into the wall socket.

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