

FROM THE U.S. PSYCHOTRONICS ASSOC. JOURNAL (1989J IN PRESS

## EFFECT OF NON-HERTZIAN SCALAR WAVES ON THE IMMUNE SYSTEM

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The recent availability of a scalar generator in the form of a Tesla watch has facilitated scientific research into the biological effects of this new type of non-Hertzian electromagnetic (EM) energy. The scientific rationale for conducting this type of research is discussed with respect to the non-linear nature of biological systems. Preliminary research findings are presented which indicate that scalar fields enhance the immune system, as measured by increased DNA synthesis in lymphocytes. Since this effect supersedes that observed by the EM field produced by the watch in the absence of the mobius strip, it can be concluded that scalar energy is more biologically active than traditional EM fields, at least in this system.

### INTRODUCTION

Although numerous studies indicate the biological significance of linear, transverse EM and acoustic waves, relatively little is known about the role of non-linear, non-Hertzian waves in biological systems. Such a role for non-Hertzian waves is likely since recent quantum mechanical analysis of biological processes has revealed the inherent non-linearity(1). Thus contrary to traditional thermodynamic theories, biochemical reactions can occur far from equilibrium and are not always dispersive and degenerative. Based on non-linear mathematical analyses of Schrodinger's EM equations, quantum mechanical models have been developed which describe subatomic quasi-particles like excitons and plasmons (2), and solitons(1). Recently it has been proposed that these quantum particles store and carry biological information along helical macromolecules like DNA(3). It has also been suggested that they are generated and propagated along helical proteins in the cell membrane in response to weak EM radiation in the visible(4) and extremely low frequency(5) spectrum. Since these quasi-particles can propagate in silicon dioxide crystal lattices( ), the author has previously proposed in the Crystalline Transduction Theory(6) a bidirectional transduction of non-Hertzian waves to transverse EM waves by liquid crystals in the cell membrane. It is also likely that non-Hertzian waves propagate throughout the body via the crystalline lattices of the elaborate collagen network comprising the extracellular space(7). These results suggest a new non-linear regulatory network in the body with properties best described by quantum physics. Although the relationship between this new network and the endogenous linear EM fields in the body (both pulsating and stationary) is unknown, theoretically non-linear waves can couple to and interact with transverse EM fields.

Since linear EM fields are known to effect biological systems, it is likely that non-linear fields will be similarly if not more biologically active. Indeed non-linear irregularities in square wave pulses generate EM fields which are usually more biologically active than purely symmetrical fields. Other wave forms exhibiting non-linear properties include non-Hertzian scalar potentials. Scalars, mathematically described in the original Maxwellian EM equations, are the electric and magnetic components comprising transverse EM vectors. Since scalars (but not transverse EM vectors) exist in 5-dimensional space/time, they do not decay with time or distance from their source and have other unusual quantum properties(8). Although scalars have not been considered by the biological community, they are well known in astrophysics, geology and hydrodynamics. They were first utilized by Nicholas Tesla at the turn of the century when he demonstrated wireless transmission of electricity without a loss of energy(9).

Biological research with scalars has recently been prompted by the availability of a scalar generator. Dr. Andrea Puharich first utilized a mobius loop to cancel the EM fields generated from an ordinary digital wrist watch. The analog Tesla watch, marketed by ELF Cocoon International has been shown to radionically to generate scalar fields, although it is unclear whether this also applies to the original digital watches. In addition to the numerous case reports from people wearing the Tesla watch, scientific studies are beginning using the watch as a source of scalar energy. The watch has the unique advantage for scientific studies since it is possible to remove the mobius loop, thereby generating the EM carrier in the absence of the scalar wave. Dr. Eldon Byrd has shown that wearing the analog Tesla watch increases the amplitude of the EEG recordings, particularly in the low frequency range. Dr. Persinger was first to utilize cells in vitro to study the action of scalar fields on mast cell degranulation(11). Scalar fields were generated by partially canceling two polarized magnetic fields (0.5Hz, 10pT) by intersecting them in air. Dr. Puharich has organized a study at the Max Planck Institute in Germany where they have shown that *E. coli* microorganisms exposed to 8.00Hz scalar fields have increased activity of the RAD-6 gene which codes for proteins involved in DNA repair(12). The author has also utilized the in vitro approach to show that the scalar fields generated from the analog watch inhibit neurotransmitter uptake into nerve cells(13) via the same mechanism as tricyclic antidepressants.

## **MATERIALS AND METHODS**

Using standard laboratory procedures(14), a mixed lymphocyte fraction was isolated from whole blood obtained from three healthy volunteers within 24 hours after being drawn. The procedure involves layering the blood onto a Histopacque (Sigma Chemical Co.) centrifugation gradient and isolating the mononuclear cell population from the interface. Monocytes were then removed by differential plating onto plastic petri dishes. The mixed lymphocyte fraction was then layered onto a second Histopacque gradient to remove dead cells and debris. The resultant fraction is a purified mixture of T and B lymphocytes. The lymphocytes were plated onto 35mm plastic petri dishes at a seeding density of  $1 \times 10^5$  cells and incubated at 37 C with 1.0  $\mu$ Ci/ml (<sup>3</sup>H)-thymidine (93 Ci/mole, Amersham Corp.) for 48 hours in a standard carbon dioxide (5%) incubator. Control dishes were exposed to Tesla analog watches with the mobius strip removed. Experimental dishes were exposed to analog watches containing the mobius strip. All watches were obtained from ELF Cocoon International. A petri dish (with its cover) was placed under each watch immediately after addition of the radioactive precursor. Control and experimental dishes were placed in opposite sides of a dual incubator separated by a metal wall to minimize possible carry over effects from the scalar fields. To assess the viability of the three lymphocyte preparations, their proliferation in response to standard mitogens was determined. Cells were treated as described above, except that pokeweed mitogen (50mg/ml) was added immediately prior to the addition of thymidine. After a 48 hour incubation at 37 C, the DNA was precipitated using 5% trichloroacetic acid and the immunoperoxidase precursor was separated from that taken up by DNA using Whatman microfiber glass filters (GF/C). The amount of thymidine incorporated into DNA was measured using a standard scintillation counter. Results are expressed as cpm/10<sup>5</sup> cells. Thymidine incorporation is directly related to the rate of cell proliferation. Seven experimental dishes and 6 control dishes were exposed to the energy from the watch in three independent trials on three different days.

## **RESULTS AND DISCUSSION**

The data in Table 1 indicate that lymphocyte exposed to Tesla watches containing a mobius strip showed a 76% increase in proliferation as compared to lymphocytes exposed to watches lacking the mobius strip (90 vs 159 cpm/10<sup>5</sup> cells). These results indicate that the presence of an 8Hz scalar wave caused a more profound enhancement of immune function than observed by an 8Hz linear EM field. Although non-linear waves have been postulated to be more biologically active than linear EM fields(u), this hypothesis had not been verified experimentally. These results are therefore the first to show that scalar waves are more active than EM fields, at least in the 8Hz region.

Lymphocyte proliferation in the absence of any watch or chemical mitogen corresponds to a blank value of  $67 \pm 20$  cpm/10<sup>5</sup> cells. Thus the EM field from control watches (no mobius strip) enhanced lymphocyte proliferation by 34%, whereas the scalar watches increased proliferation by 137% compared to blanks. Other investigators have also shown that weak EM fields can stimulate lymphocyte proliferation(15) The magnitude of their EM effect is similar to that reported here. The data in Table 1 are proliferation values obtained for the two types of watches minus blank values. The zero values indicate that the small EM effect on proliferation was not found in 2 out of 6 cases. This corresponds to clinical observations which indicate that as many as two-thirds of the population are not sensitive to EM fields. It is interesting to note that a scalar effect was observed in all cases, although the magnitude of the effect varied 8-fold in the three individuals studied. Since these are normal individuals, it is unknown to what extent scalar fields will enhance the immune system from immunodeficient individuals.

**Table 1:**

TRIAL	CONTROL WATCH	SCALAR WATCH
1	0	375
2	173	295
3	69	60
4	0	29
5	143	65
6	153	247
7		44
<b>Mean</b>	90	159
<b>S.E.M</b>	31	53

Results are calculated from duplicate samples simultaneously exposed to either control watches (lacking a mobius strip) or scalar watches (containing a mobius strip.) The values are expressed as counts per minute (cpm) of radioactive thymidine incorporated into DNA normalized to cell numbers (105 cells). The value obtained from blank dishes (identical conditions except not exposed to any watch) has been subtracted from the values in the Table. A value of zero therefore indicate the control watch had no effect on lymphocyte proliferation in that trial. Results are significant at p.001.

The magnitude of the scalar effect can also be compared with chemical stimulation of the immune system with pokeweed mitogen. This mitogen stimulated the lymphocytes used in this study by 149% compared with blanks. Thus the scalar waves enhanced the immune function to approximately the same degree as was obtained the standard chemical stimulation. This indicates the profound influence the scalar waves have on lymphocyte proliferation *in vitro*.

The results reported here also indicate that scalar energy can directly effect the cells of the immune system. Similar results were reported by the author who observed direct effects of scalar waves on nerve cells *in vitro*(13). The use of tissue culture techniques in these and other experiments, indicate that scalar fields can have direct effects at the cellular level independent of psychosomatic effects mediated by the mind. However, it is still possible that scalar waves will also effect the mind and may explain some of the physiological effects observed clinically, *ea.* independent of direct cellular effects. The complex relationship between mind and body is now receiving much attention and a new field of research, called Psychoneuroimmunology, as emerged to address these questions(16). With respect to lymphocytes, it is now known that mental attitude and stressful life events, as well as diet, drugs and the amount of sleep can all inhibit lymphocyte proliferation. To further complicate the picture lymphocytes secrete chemical messengers, called cytokines, which can influence the brain. Thus the communication between the nervous and immune system is bidirectional.

Although the scalar field generated from the Tesla watch has profound effects on lymphocyte proliferation, it should be pointed out that we do not know to what extent these or other biological effects will depend on the amplitude and frequency of the signal, as is known for EM fields. Thus the 8Hz signal used here may not be optimal with regards to stimulating the immune system. Whether similarly large effects will occur clinically in individuals wearing the watch is also unknown. Needless to say, this situation is far more complicated since lymphocyte proliferation will be influenced by a wide variety of biochemical(17) psychological(18) and electromagnetic( regulatory factors. It is presently unknown to what extent scalar and electromagnetic fields interact. If scalar fields are clinically immunoenhancing, the potential exists for treating immunodeficient diseases like AIDS, cancer, Ebstein Barr and even flu symptoms with scalar energy. The results presented here indicate that this approach should be far more efficacious than using conventional linear EM fields.

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