Bio-Magnetic Replication of Sensory and Remote Stimulation

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Abstract: A base mechanism of sensory and remote perception was demonstrated to be pulsating rhythm of human electromagnetic field. Immediate response on rhythmic sensory stimulation has been expressed in same bio-magnetic oscillations detected through skin vibrations by sensitive persons. In experiments with sensory rhythm influences measurements of resonant skin vibrations have shown resonant and replication (memory) effects. It was newly found the replication effect keeping after signal’s stopping up to 1-2 minutes. Biophysical mechanism is suggested on experiments with blood cells with incorporated ferri-containing protein ferritin, its aggregates, free radicals. High gradient steady magnetic fields were used to reveal magnetic anisotropy determining the vibrations of cells in weak pulsating magnetic fields.

Keywords: magnetic perception, ferritin, nanoparticles, sensory perception, biomagnetism.

1. Introduction

In previous papers¹,² new parameters of human magnetic susceptibility had been involved to present our experiences with persons having high sensitivity to pulsating magnetic fields: reaction time on pulsating magnetic stimuli and resonant frequency of skin vibrations were detected subjectively and objectively. A lot of publications on pulsed stimulation appearing in ISLIS-Journal suspected about a great interest to this problem. Influences of 4-30 Hz light illumination of meridian points were revealed in vision parts of brain within several seconds ³. Under 1.2 Hz electric stimulation over the skin applied to acupuncture points resulting theta wave zone was suppressed and alpha wave zone was increased ⁴. Characteristic frequencies of emitted magnetic field measured from two masters palms consisted 0.1-4 Hz with high intensity up to 100 nT ⁵. authors suggested that magnetic materials inside hands’ tissue might change the alignment of some microstructures advancing the magnetic permeability of hands and bio-magnetic human field. In body skin reported conductivity measurements⁶ the heterogeneous distribution of human internal electromagnetic field showed only 30%-contribution of electric measurements from the horny layer, the rest conductivity – from whole electromagnetic body.

In this paper we have developed our idea about electromagnetic mechanisms of human perception. Our understanding of electromagnetic perception is based on numerous reports about biophysical effects. Some mechanisms deal with long time responses of living systems (hours, months, years), and others - with immediate replies like resonance phenomena under forced stimulation. Question arises how is the immediate reaction formed. In weak pulsating magnetic field⁷ the fast triggering mechanism caused skin muscle contractions as conditional reflex on pulsating electromagnetic body field. In Chinese acupuncture medicine⁸ physiotherapies are explained as distribution of influences on the structures of electromagnetic biofield, concentrating a person’s attention and shifting his consciousness to right direction. The connection between electromagnetic bio-fields of departed persons can be revealed in remote consciousness experiments; D. Radin reported about simultaneous physiological effects between 3 persons ⁹, which changed roles of healer, patient and experimenter and suggested that mental attention can influence remote human physiology.

In presented paper it is demonstrated that if an external stimulation is given in a rhythmic manner under sensory actions then secondary effect remains in electromagnetic body field. Moreover, electromagnetic body standing waves are kept for some time between
trained persons and perceived by them subjectively as own internal oscillations.

1.1. Magnetic Properties of Microparticles.

The movements of cells and microparticles in external magnetic fields are determined by their magnetic volume susceptibility \( \chi \). Since induction of magnetic field is determined as \( B = \mu H \), and the substance's magnetization \( I \) is equal \( \chi H \), magnetic permeability of substance is \( \mu = 1 + 4\pi \chi \), because \( B = \mu H \).

Since a membrane occupies less than 3% of the cellular volume, its contribution has the less significance in magnetic behavior as compared to the intrinsic magnetic properties. Two kinds of molecules are involved to the magnetic susceptibility balance processes: diamagnetic (without own magnetic moments) and paramagnetic (having non-coupling spins) components. In a uniform magnetic field the intra-molecular electronic currents generate a diamagnetic moment \( M \) proportional to the magnetic field \( H \): \( M = \chi_0 H \), that is common property of all substances, \( \chi_0 \) - density magnetic susceptibility. If molecules contain unpaired electrons, their summing spin are not zero, producing paramagnetic moments. The paramagnetic susceptibility per molecule is described by Curie's law \( \chi = \frac{\mu^2}{3kT} \), where \( \mu \) is proportional to the g-factor characterizing the coupling between spin and orbital moments. The orientable properties of macromolecular systems in homogeneous magnetic fields are usually caused by their overall anisotropic magnetic susceptibility from the contributions by anisotropic molecular properties, anisotropic shape and the intrinsic inhomogeneity of magnetic susceptibility. In inhomogeneous (gradient) magnetic fields a translational movement is observed for particles with isotropic shape. Really, an anisotropic particle can show as translational also an orientational and rotational behavior. A magnetic translational force \( F_\parallel \) depends on the variation of magnetic field \( H \) across the particle, more exactly, from the value (H·gradH), besides that, on the difference \( \chi \) of magnetic susceptibility of particle \( \chi_p \) as compared to the susceptibility of the environmental fluid \( \chi_f \) and on the particle volume \( V_p \): \( F_\parallel = (H \cdot \text{grad} H) \chi_f V_p \). Figure 1 demonstrates that in weakly diamagnetic dilute solutions paramagnetic (relatively medium) particles are attracted into the high field region and diamagnetic particles are repelled from the gradient magnetic field concentration, the sign of the drift along the magnetic capture trajectories is opposite for both cases.

1.2. Ferritin Nanoparticles and Aggregating.

It is well-known that iron-storage protein ferritin supplies red blood cells and other tissue by Fe-ions under bio-fusion of hemoglobin. Nanoparticles of ferritin molecules contain cores of oxy-hydrate Fe (III) coved by 24 subunits protein shell with an external diameter of 12 nm, internal one - 9 nm. Although mammals iron is stored in form of super-paramagnetic Fe(III)-hydroxide gel, in waterless conditions the transforming its into ferromagnetic magnetite crystals occurs really inside ferritin molecules; in other words, iron storage proteins could reveal super-paramagnetic, anti-ferromagnetic (2 sub-lattices in ferritin's cores were observed ) and ferro-magnetic properties. Magnetic susceptibility of iron-containing proteins was proved to be anomalous, increasing sharply even in weak magnetic fields.

For magnetite (strongly magnetic mineral, found in animals, magnetic bacterium), - the measured threshold of flocculating magnetic field is on the order of a few of gauss, such a field has an industrial and magnetotherapy level.

1.3. Blood cells' resonant vibrations.

In the experiments with suspensions of red blood cells two types of cells' functional states were compared. The diamagnetic (relatively saline solution) and paramagnetic red blood cells were submerged into external pulsating magnetic field 5.5 Hz, 0.01 mT. Diamagnetic cells containing oxyhemoglobin more than 99%, as human arterial blood, are homogeneous in their magnetic susceptibility (test on Fig. 1a). The resonant response shown on Fig. 2 on pulsating magnetic field was detected with paramagnetic red blood cells (for cells on Fig. 2b) having magnetic non-regularity from ferritin and free radical adds.
Magnetic aggregation of weakly magnetic particles, paramagnetic and diamagnetic, were also predicted in external magnetic fields\(^{17,18}\).

Ferritin molecules were found in vivo to form aggregate structures displaying strong magnetic anisotropy, so, registered outside of the body magnetic field using bio-magnetic SQUID measurements is determined not only concentration of iron, degree of saturation with iron, but also the aggregation of ferritin molecules\(^{19}\). Under thalassemia the liver iron concentration (mainly in ferritin) ranged from 170 (normal level) to 9400 \(\mu g/g\) liver.

![Graph](image)

**FREQUENCY OF CELLS VIBRATIONS, Hz**

Fig. 2. Fourier Spectra of Flicker-Signals for Red Blood Cells Detected by Speckle Microscope\(^{19}\). Paramagnetic cells with ferritin adds. Effect reveals the second resonant harmonic - 11 Hz, it means the quadratic type of the observed response. (Amplitudes of Fluctuation Intensity on Y-axis in arbitrary units).

The vibrations of ferritin drops (Fig.3) under forced acoustic frequencies generated by acoustic sources are occured in living organisms.

**DROP WIRE**

![Image](image)

**Fig.3. Growth of Ferrofluid Drop Under Gradient Magnetic Field Near Ferromagnetic Wire Surface Over 15 min \(^{19}\).**

2. Methods of Resonant Skin Vibrations Measure.

Tested persons (female, 36 years old; male, 54 years old) were autogenic methods practitioners\(^{17}\). They claimed that skin resonant vibrations of face muscles were used for abilities trained with musical rhythms using audio-player when concentrating on skin points\(^{2,15}\).

Tested person was asked to count 30-40 beats of perceived oscillations after 3-5 sec. from stimulus stopping to determine the perceived frequency value. Moreover, time of establishing the resonant vibrations from the moment of the stimulus stopping was recorded as reaction time in period 2-80 sec.

1.9-2.2 Hz sound stimulation was presented using audio-recording heads of the recording for 1 min. of a musical metronome (dull) hits. For the detection of replication (memory) effects in more than 40 experiments with rhythmic influences, the measurements of resonant skin vibrations were conducted after the turning the sensory stimulation off, it was studied a replication effect keeping after stopping of stimulation up to 1-2 minutes.

In conflict experiments between sound stimuli through pulsating rhythms and partner’s remote consciousness action in several sessions their superposition were influence the skin vibrations. Conflict situations arose in those experiments when the second partner, being far from the first partner more than thousand kilometers, felt the starting of experiment and tried to interrupt the skin vibrations of the first partner by the remote influence. Errors consisted 5-20 % measured values.

3. Results and Discussion.

In skin vibrations studies the sound’s rhythm was determined by the person after turning stimulus off when resonant skin oscillations appeared. Fig. 4 reflects gradual reducing of perceived frequency of skin vibrations of one person after the audio-player signal stopping over 10-80 sec.

![Graph](image)

**Fig.4. Skin Oscillations Frequency via Delay Time After Stopping of Stimulation. Delay time after the turning sound 1.9 Hz stimuli off measured before detecting of resonant skin vibrations.**
Fig. 5 demonstrates the influence of rhythmic sound stimulus over 3-5 sec. interruption of the 1.9 Hz-audiodrayer sound's stimulus lasting 30 sec. The second harmonic 3.8 Hz predominates, showing the more important role of velocity of changes than the amplitude values. There are interesting facts of competition of two rhythms after stopping stimuli’ influences: the second harmonic overcame the first harmonic when the sound intensity was strong.

When the external consciousness action participated, the responsive reaction of skin vibrations showed the random rhythm – from remote healing action (noticed by two points on Fig. 5 at “0” Hz), it was the decisive factor for patient. Other words, conflict experiments with sound and remote consciousness stimuli through pulsating rhythms given simultaneously have revealed a predomination of the external consciousness action rhythm over the sensory sound stimulus. Results presented revealed new effects of the pragmatic information, keeping in electromagnetic body after stopping of sensory and remote actions. We might think that a person listening music under the attention concentration on a departed second person is a source of same musical rhythms for that second person perceiving like the external rhythms.

Sensory rhythmic influences caused the resonant skin vibrations with replication (memory) effects.

![Graph](image-url)

**Fig.5. 1.9 Hz Acoustic Stimuli gave the Second Resonant Harmonics for Skin Vibrations after 3 sec. Delay Time after Stopping of Stimulation.**

It was newly found a replication effect keeping after stopping signals.

In experiments with tactile and light stimulation there were obtained surprisingly similar (as in the acoustic experiments) effects on skin vibrations of same a person: 2 Hz frequency value from stimulus was repeated in skin vibrations over 3-5 sec. Moreover, if any sensory stimulation was conducted with one from two partners then the second one was perceived the resonant skin vibrations with same frequencies or rhythm. This is subject for further study.

Spinal cord of human and animals contains the super-paramagnetic domains of ferritin macromolecules, those nanoparticles can give vibrated effects in very weak fields and can be responsible for the dowser’s abilities. Arising under physiological stresses dia-paramagnetic anisotropic cells in the results of oxidative radical reactions could be connected with primary mechanisms of human magnetic sensitivity.


Measure of electromagnetic rhythmic replication allows the detecting of significant influences on the patient, it is suggested to practice for diagnostics and for recovery after artificial damage stimulation. Audio-player devices were revealed to act as the repetitive rhythm stimulation (even after interruption of sounds) on electromagnetic body and consequently to influence the cells of organism. We conclude that skin vibrations were the exact replication of electromagnetic body’s oscillations and the role of external consciousness was important for electromagnetic memory. Found the replication effect after sensory rhythmic stimulation expressed in human resonant electromagnetic and skin oscillations was proposed to reflect the level of dowser and remote exchange abilities.

Possibly, aggregating of ferritin nanoparticles in organism under weak magnetic fields could form temporary ferromagnetic microparticles, which might be responsible for the resonant bio-magnetic reply on rhythmic stimulation.

References


4. Koyama Y., Ueda E., Fukuoka H., Fukuoka A.: Comparison of the Effectiveness of


