[Embi et. al., Vol.6 (Iss.11): November 2018] ISSN- 2350-0530(O), ISSN- 2394-3629(P)
(Received: October 28, 2018 - Accepted: November 27, 2018) DOI: 10.5281/zenodo.1845985

INTERNATIONAL JOURNAL OF RESEARCH – GRANTHAALAYAH
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HAIR AND BLOOD ENDOGENOUS LOW LEVEL BIOMAGNETIC FIELDS CROSS-TALK EFFECTS ON FIBRIN INHIBITION AND ROULEAU FORMATION

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Abstract

This manuscript introduces a microscopic tabletop technique that demonstrates endogenous biomagnetic fields tissue crosstalk; namely the human hair and human blood. This interaction induces red blood cells (RBCs) agglutination and Rouleaux Formations. Man made exogenous static magnets as well as pulsating low-level magnetic fields have been applied to small animals and shown to affect blood parameters. Those experiments showed an increase in blood coagulation time attributed to the treatment. Ever since the development of a tabletop technique (introduced in 2016) numerous papers have demonstrated the intrinsic pulsating low-level biomagnetic fields emitted by the human hair shaft and follicle. Several published hypothesis involving body parts biomagnetic interactions have been published; they range from diseases such as cancer to the role of iron levels in blood biomagnetically interacting with arterial tissue and atherosclerosis.

Keywords: Biomagnetic Tissue Cross-Talk; Hair Pulsating Biomagnetism; Atrial Fibrosis; Rouleaux Formations.

Glossary

Agglutination: RBCs are clumped together
Diamagnetism= Diamagnetic materials create an induced magnetic field in a direction opposite to an externally applied magnetic field; therefore repulsion.
Tissue cross-talk= Communication (molecular or biomagnetic) between body tissues.
LLMFs= Low level magnetic Fields-
Magnetic Field Reach= The maximum distance at which a magnetic field effect is felt. For example the hair follicle magnetic field reach has been measured at between 2.5 and 3 mm.
Rouleau Formation= RBCs are arranged like a stack of coins. (Plural Rouleaux).

Cite This Article: Abraham A. Embi Bs. (2018). "HAIR AND BLOOD ENDOGENOUS LOW LEVEL BIOMAGNETIC FIELDS CROSS-TALK EFFECTS ON FIBRIN INHIBITION AND ROULEAU FORMATION." *International Journal of Research - Granthaalayah*, 6(11), 200-208. https://doi.org/10.5281/zenodo.1845985.

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1. Introduction

The purpose of this manuscript is to report for the first time biomagnetic inter-tissue cross-talk between human hairs and blood. The effect of low-level static and pulsating magnetic fields on blood coagulation in small animals has been reported (1, 2). This manuscript presents the effect of biomagnetism emitted by the human hair follicle on adjacent RBCs agglutination, fibrin inhibition and Rouleaux Formations. The recording of biomagnetic fields generated by the human hair was successfully introduced in 1980, this by a group of researchers led by Dr D. Cohen (3). This finding was duplicated in 2016 with the introduction of a tabletop microscopy technique utilizing diamagnetic fluids to also display the hair biomagnetic fields (4). The inherent biomagnetic energy emitted by the human hair follicle was also introduced in the literature (5). Documentation of skewed biomagnetic fields emanating from the human hair was observed by using the tabletop technique (6). In a paper demonstrating the Human Hair Follicle Biomagnetism penetrating through glass barriers, the pulsating nature of the human hair was documented (7). In this manuscript, *In vitro* experiments are introduced showing the effect of the human hair low-level pulsating biomagnetic fields effect on blood by inhibiting fibrin formation, as well as Rouleau formation.

2. Materials and Methods

Tweezers plucked complete human hairs were placed on a 25x75x1mm clean glass slide. For ease of handling, the hair shafts were cut at approximately 30 mm from the follicle. A finger phalanx was punctured via a small sterile needle, the finger milked and two blood drops were placed on a separate slide and thinly smeared. The smear technique has been used for years in clinical laboratories (8); it entails placing the edge of a slide at a 45^0 angle on the previously placed blood drops. The inclined slide is then steadily pushed forward, thus creating a thin blood smear. The smear dries quickly (in less than 40 seconds); therefore is critical to place the already harvested hair on the wet smear. The slide, now having the smeared blood and hair in place is positioned on the video microscope platform; images observed and recorded via a video microscope (Celestron model #44348) and downloaded into an Apple computer photo application for further review.

3. Results

A total of 15 out of 20 samples were adequately mounted. Adequately meaning that the hair follicle was placed on a wet smear. The hair should be placed in an area void of blood clumps, thus yielding convincing visual display of the effect of biomagnetic fields on blood coagulation and rouleaux formation. The 10 samples reported were a mix from different body sites of plucked hairs from the author (76 y/o Caucasian) as follows:

Six (6) gray scalp hairs, one (1) black scalp hair, two (2) black umbilical hairs, one (1) black mustache hair and five (5) eyebrows (3 darks and 2 grays). All hair follicles were observed displacing the blood cells surrounding the follicles (Figs 2,3). This unilateral effect of blood repulsion was noticed in all 15 samples. The author suggests viewing the videorecording, either by scanning the QRcode or clicking the video link: https://youtu.be/ErBiwoXgxRY

ISSN- 2350-0530(O), ISSN- 2394-3629(P)
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4. Thick Blood Smear Images

The images shown below are from two different approaches. The blood drop in Figures 1 and 2, the blood drops were from fingertip-smeared blood onto the slide. This produced a thicker layer of blood. This technique had disadvantages such as difficulty in reproducibility as to a standard smear thickness.

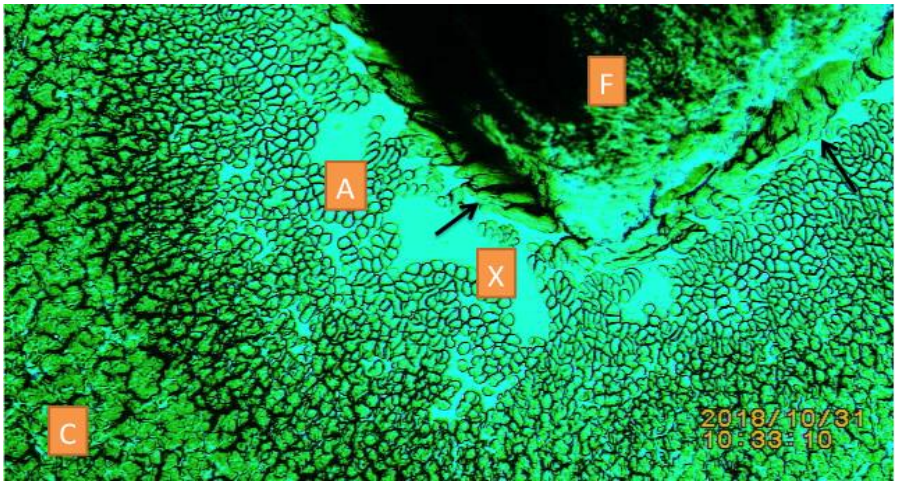

Figure 1: Human hair on glass slide immersed in blood drops. Showing inhibition effect on blood clotting by the hair biomagnetism.
F=Follicle A= Agglutinated (lacking fibrin) and Rouleau formation of RBCs. X= Hair biomagnetic field zone. C= Clot (fibrin) formation away from follicle's biomagnetic reach.

Black Arrows= Follicle Dermal Cup. X 20 Magnification.
For further details click link below, or scan QRcode.
https://youtu.be/ErBiwoXgxRY

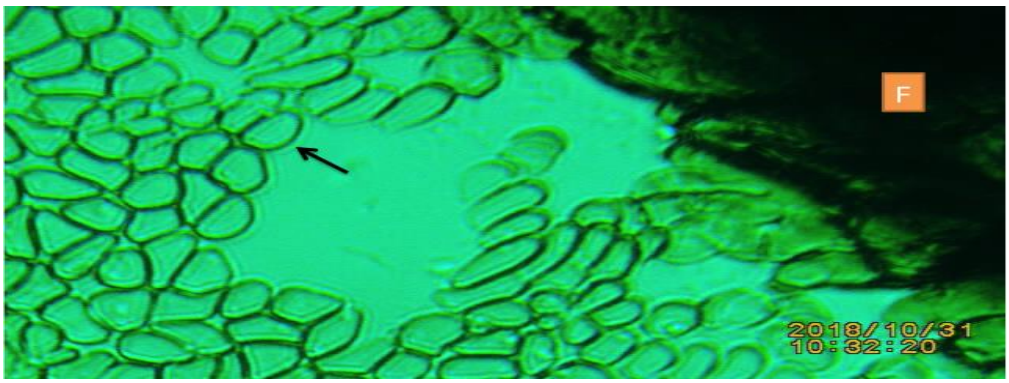

Figure 2: Amplified image of zone in Figure1, showing agglutinated RBC's due to the hair follicle diamagnetism. F= Follicle Black Arrow= Agglutinated RBCs.
X40 Magnification. Notice absence of fibrin formation.

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5. Thin Blood Smear

The following images were obtained by using a recommended technique for blood smears by the Center For Disease Control in USA (8). This technique creates a one cell thin smear on the glass slide. Details not previously appreciated can now be analyzed. Such as:

- Rouleaux Formations triggered by the LLMFs of the hair. This is clearly seen in (Figs 3,4,4A). Rouleaux formation is when cells are arranged "like a stack of coins".
- RBCs agglutination. (Fig 5). Agglutination is when cells are randomly clumped together.

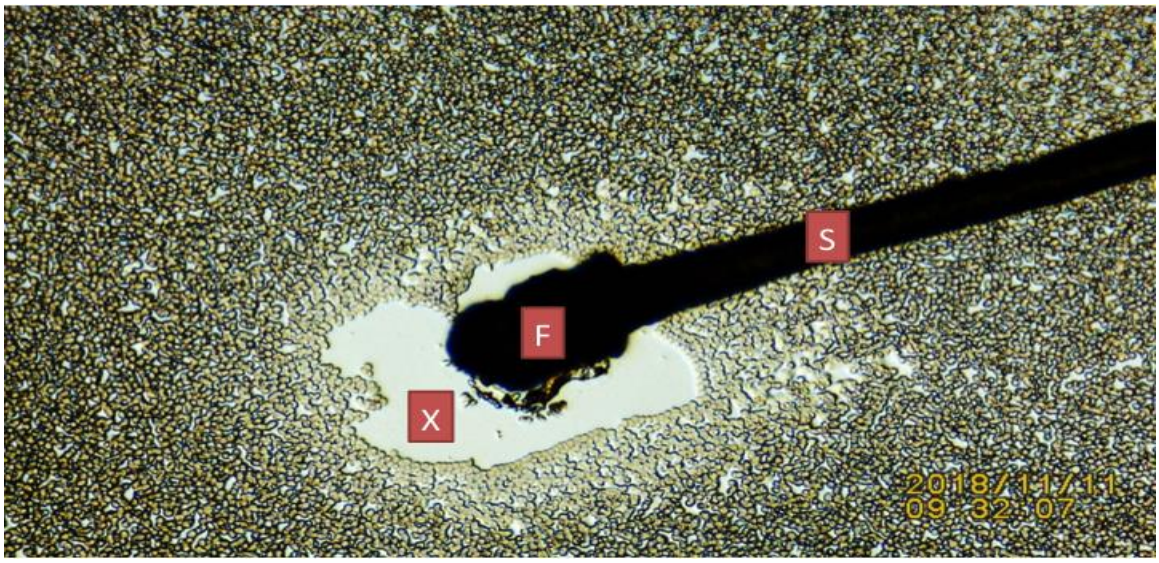

Figure 3: Showing hair placed glass slide covered by a thin blood layer (smear).
F= Follicle X=Diamagnetic Zone S= Hair shaft (not in contact with blood smear). Notice the difference with Figure 1.

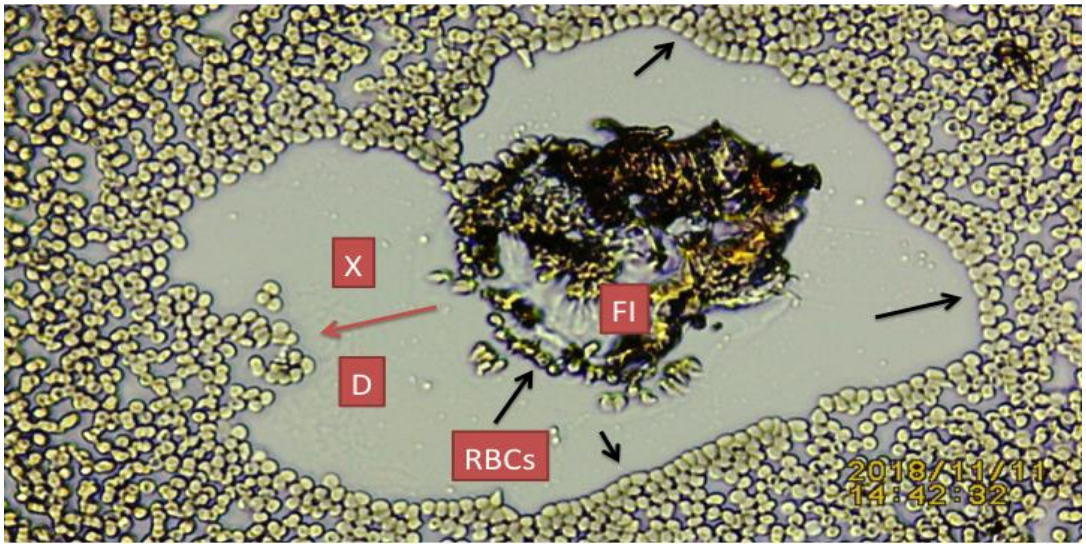

Figure 4: Hair removed from glass slide showing follicle imprint.
FI= Follicle imprint X= Diamagnetic Zone D= Displaced RBCs outline. RBCs= Individual RBCs adhering to folllicle. Black Arrows= Roleaux RBC formations triggered by LLEMFs. Red Arrow= Agglutinated RBCs

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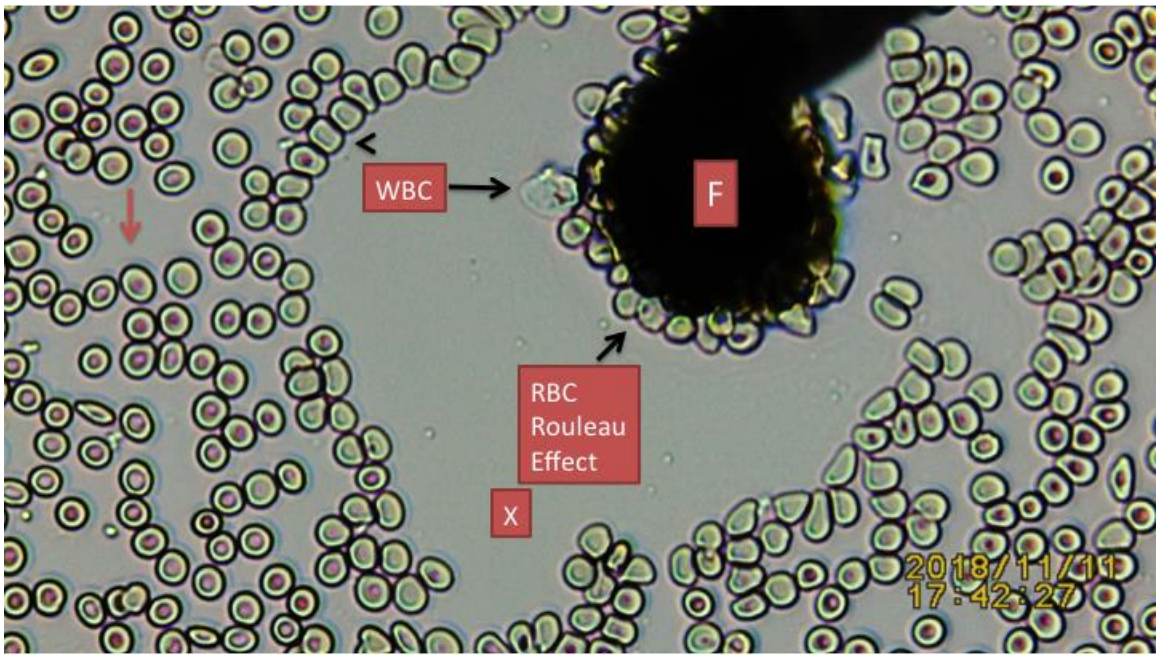

Figure 4A: Example of a thin smear. Small hair from arm mounted on blood smear. Notice the adhesion of white blood cell to the outer layer of follicle.

Arrow head= RBCs in Rouleau formation. Red Arrow= Towards left of image shows RBC agglutination. Notice the smallness of the hair follicle when compared to the RBCs diameter.

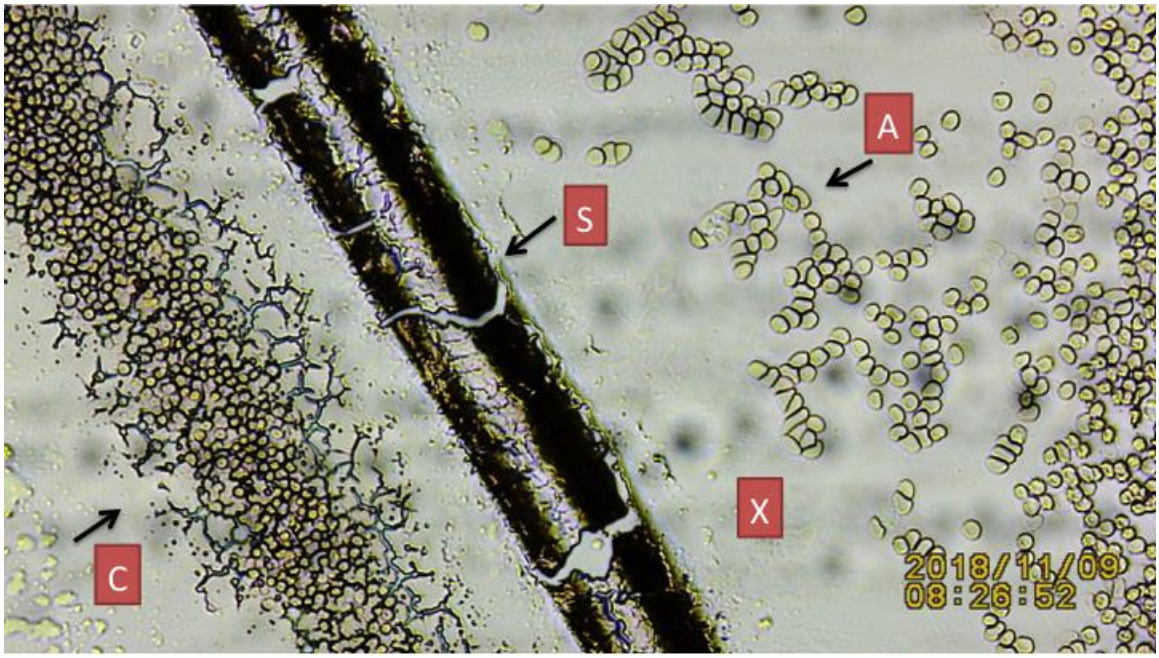

Figure 5: Microphotopraph depicts hair shaft outline.

A= RBCs, Agglutinated and in Rouleau Formation. S= Hair shaft. C= Coagulated blood, denoting fibrin formation in side void of biomagnetic fields. X= Diamagnetic zone.

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6. Confirming the Hair Follicle Repulsion of Diamagnetic Materials

The microphotographs below have similarities, which are the trapping of a hair follicle by an air bubble, as well as by human blood. In both instances there is no direct contact between the follicle and the adjacent material. Graphically, in both instances the repelling property of the human follicle towards a diamagnetic material is demonstrated (Figs 6,7).

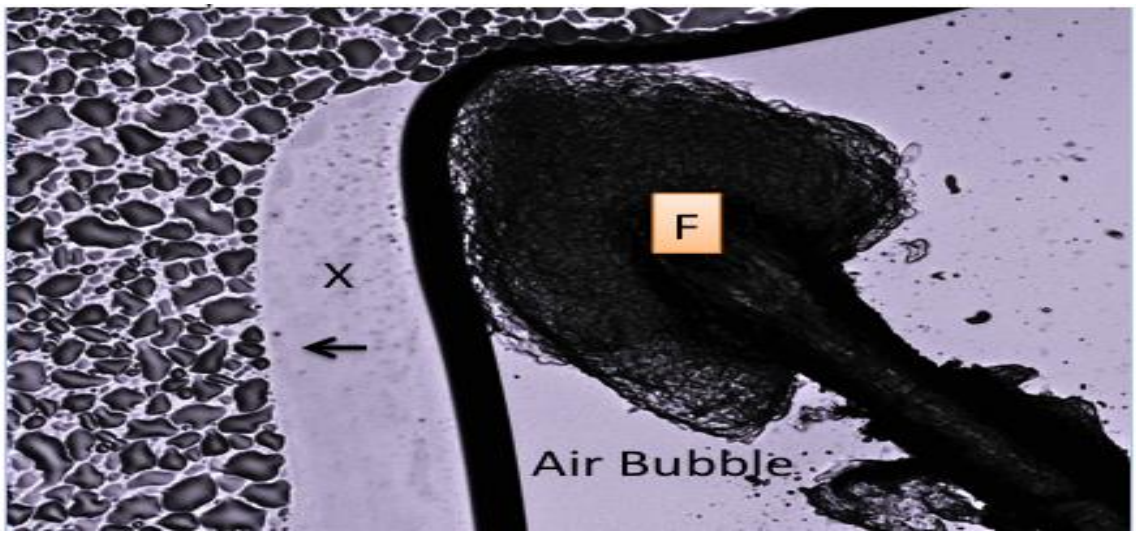

Figure 6: Ancillary testing. Potassium Ferrocyanide solution and Hair sandwiched between two glass slides; and by chance trapped in air bubble.
F= Follicle Black **Arrow**= Pointing at Potassium Ferrocyanide crystals repelled by the hair biomagnetic fieds. X= Biomagnetic zone inhibiting crystallization.

The next figure below shows the hair follicle also repelling a diamagnetic solution (human blood). The hair in this example is trapped by a thick blood drop.

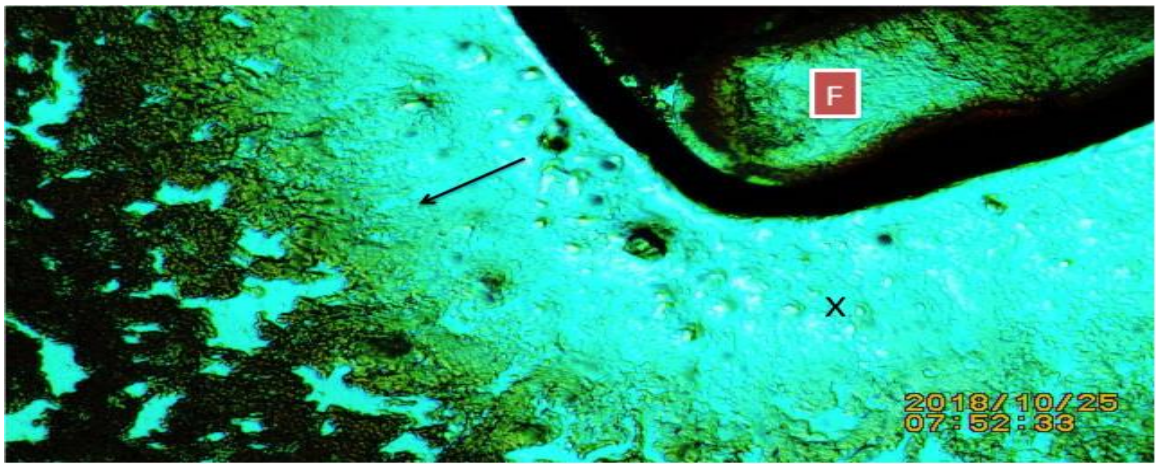

Figure 7: Hair on a glass slide and trapped in a blood clot.
Black Arrow= Notice repulsion of coagulated blood by hair biomagnetism F= Follicle X= Fibrin empty area due to the hair diamagnetism interacting with blood smear. The blood in this slide was finger-smeared; therefore having thicker blood layers.

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7. Confirming the Unilateral Diamagnetic Trails of a Cut Hair Shaft

Hair shafts have been reported to emit pulsating biomagnetic fields (9); and its magnetic trail was recorded *in vitro* by using a combination of food coloring and potassium ferrocyanide in solution (Fig 8). The image obtained in this supplementary material correlates with the location of the LLMFs actual images seen in Figure 9 below.

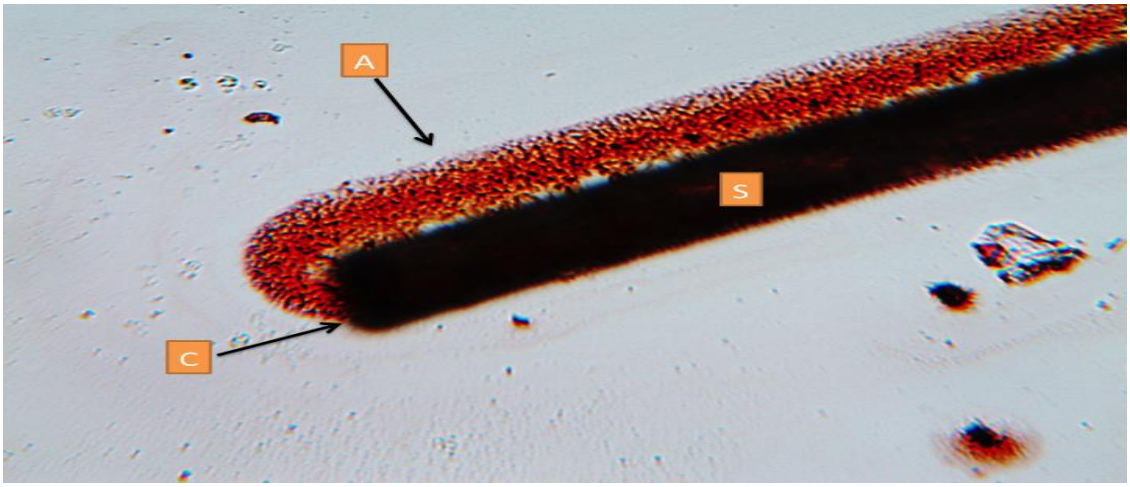

Figure 8: Cut hair shaft immersed in food coloring mixed with Potassium Ferrocyanide, placed on a glass slide, allowed to evaporate, showing biomagnetic trail.
Highlighted by Ferrocyanide + food coloring particles. A= Cut shaft biomagnetic trail S= Hair Shaft C=Cut Shaft.

The Figure below (Fig 6) shows a cut hair shaft on a glass slide and covered with blood, emitting biomagnetic signals in a similar fashion when immersed in a diamagnetic solution as shown in Figure 5 above.

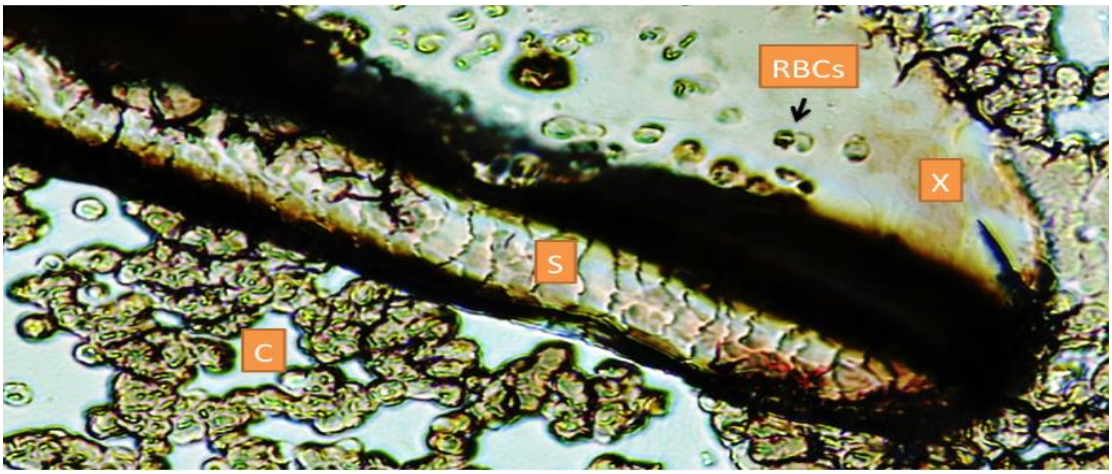

Figure 9: Unilateral shaft diamagnetism inhibiting fibrin formation. Microphotograph of hair shaft cut end on glass slide immersed in blood.
S= Shaft end with hair cuticles in display. C= Blood clots forming in area void of diamagnetic repulsion. X= Biomagnetic zone. RBCs= Lack of fibrin formation affected by biomagnetism.

ISSN- 2350-0530(O), ISSN- 2394-3629(P)
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8. Discussion

Exogenous Low-Level Magnetic Fields Affecting Blood of Small Animals

The effect of static and pulsating magnetic fields affecting blood coagulation parameters in small animals have been reported. Both studies found static and pulsating Low level Magnetic Fields (LLMFs), affecting blood coagulation parameters by increasing the blood clotting time. In this manuscript we introduce a human inter-tissue biomagnetic cross- talk affecting blood coagulation parameters due to the inhibition of fibrin formation.

Endogenous Human Low-Level Magnetic Fields Emitted by Hairs Affecting Fibrin

This manuscript introduces visual (qualitative) images confirming the effect on human blood in adjacent areas where the hair follicles generated pulsating low level diamagnetic fields reach are present. Human hairs follicles and shafts have been extensively reported in the literature to be LLMFs pulsating emitters. The pattern of skewed biomagnetic fields emitted by the hair was graphically displaced and reproduced in *in vitro* experiments. In this manuscript, microphotograph of slides are displayed showing repulsion of a diamagnetic material (human blood) by the hair follicle and shaft intrinsic LLMFs. The diamagnetic property of hemoglobin is theorized to be a factor in the observed rejection (10) by the intrinsic (also) diamagnetic Low Level Magnetic Fields of the human hair (11). Furthermore, the effect of magnetic fields on protein coagulation during fibrin formation has been described as a mechanism for this phenomenon. "It is shown that the rate of protein coagulation during the formation of fibrin gel under the action of thrombin on fibrinogen decreases ~2 times in the presence of magnetite nanoparticles, and the magnitude of the average fiber mass/length ratio grows." (12).

9. Summary/Conclusions

In vitro experiments are presented demonstrating the effects of a biomagnetical cross-talk amongst two human tissues, namely the hair and blood. The effects of such endogenous interactions are introduced. This manuscript graphically display the effect of endogenous Low Level Magnetic Diamagnetic Fields emitted by a human miniorgan (13) on adjacent whole human blood. Images of 15 separate experiments shown in this manuscript seem to confirm the interaction of two human tissues hair root and shaft with adjacent blood. The anticoagulation effect on blood drops by the intrinsic pulsating LLMFs emitted by a human tissue is demonstrated and supported by previously published experiments. This is the first time endogenous biomagnetic forces having similar effects as exogenous magnetic forces on human blood parameters.

Plasma Proteins, Biomagnetism and Attenuation of Atrial Interstitial Fibrosis

The effect of LLMFs on the *rate of protein coagulation during the formation of fibrin* is identified as a possible factor explaining the *"attenuation of interstitial fibrosis"* (14) on atrial tissue by Low Level Transcutaneous Electrical Stimulation (LLTS) of the auricular branch of the vagus nerve. An additional important finding is also introduced which is the triggering effect of the hair LLMFs on RBCs stacking, also referred as The Rouleau Effect. This effect is theorized to also be associated with plasma proteins under the influence of magnetic fields (15).

(Received: October 28, 2018 - Accepted: November 27, 2018) DOI: 10.5281/zenodo.1845985

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