



Review Article

The Hidden Secrets of the Hydrogen Atom Mechanics in Hossam's Hybrid System for the Healing & Rejuvenation of the Refractory Diseases in the Elderly: US Patents Review

Hossam Mohamed^{1,2,*}, Houda Almansour^{1,2}, Dalal Alsaadoun³, Mariam Almansour⁴, Sawsan Samy¹, Yasmin Almansour⁵

¹Medical & Research Department, Huda Health INC, Ottawa, Canada

²Medical & Research Department, Houda Almansour Global Medical Device & Designs INC, Ottawa, Canada

³Internal Medicine Department, College of Medicine, King Faisal University, Alahsa, Saudi Arabia

⁴Department of Endocrinology, Alfaisalia Hospital, Alhafouf City, Saudi Arabia

⁵Department of Palliative Care, Specialized King Fahad Hospital, Dammam, Saudi Arabia

Email address:

hossamortho@gmail.com (H. Mohamed), hossamortho@gmail.com (H. Mohamed), halmansour@csnottawa.ca (H. Almansour), Dalsaadoun@kfu.edu.sa (D. Alsaadoun), Maryam17757@gmail.com (M. Almansour), arssammi@aol.com (S. Samy), Yahalmansour@moh.gov.sa (Y. Almansour)

*Corresponding author

To cite this article:

Hossam Mohamed, Houda Almansour, Dalal Alsaadoun, Mariam Almansour, Sawsan Samy, Yasmin Almansour. The Hidden Secrets of the Hydrogen Atom Mechanics in Hossam's Hybrid System for the Healing & Rejuvenation of the Refractory Diseases in the Elderly: US Patents Review. *Frontiers*. Vol. 2, No. 1, 2022, pp. 46-56. doi: 10.11648/j.frontiers.20220201.15

Received: January 17, 2022; **Accepted:** February 4, 2022; **Published:** February 16, 2022

Abstract: Infrared (IR) laser therapy has a good reputation for healing damaged tissue. Pulsed Electromagnetic field therapy (PEMF) also has a very beneficial effect in the healing of painful orthopedic diseases. The most important difference is in the *wavelength* where there is a great discrepancy between the above 2 waves. According to the Stimulated Emission of Albert Einstein in his explanation of Quantum Mechanics, it is impossible to link 2 or more electromagnetic waves except if they are of the same wavelength. The US patents (US9452297) & (US9757583) had issued to solve this problem of connection of the IR laser and PEMF. However, the discrepancy in the wavelength is huge but these patents exploited the mechanics of the hydrogen atoms to become the medium of connection between the above 2 electromagnetic waves. The newly merged electromagnetic wave has the advantages of both of them. Moreover, each one of them could augment the other. Therefore, it would be not only a *combination* but rather a *synchronization*. This would be considered a breakthrough for the non-invasive methods of treatment. Moreover, it is greatly recommended in a patient with pain who is in his/her end-stage condition like renal failure, hepatic failure, heart failure, and the IV stage metastatic cancer. The surgery or even medication may not be a perfect choice but this new modality may be the one.

Keywords: UPEMF, Infrared Laser Therapy, Hybrid System, Mitochondria, Stem Cells, Hydrogen Atom

1. Introduction

Infrared laser therapy has a good reputation for the treatment of chronic and refractory diseases in the elderly. The only drawback of this method of treatment is its poor tissue penetration. Therefore, it is very successful in the treatment of the very superficial areas of tissue damage. This is why it is used mainly in cosmetic conditions. i.e. the skin and very near

subcutaneous tissues. The deeper the area of tissue damage, the less the efficacy of the treatment [1]. The appearance of Pulsed Electromagnetic field therapy (PEMF) and its update by NASA's patent in 2009 acted as a breakthrough [2]. This is used as the non-invasive method of the treatment of painful chronic diseases in the elderly without the side effects of surgery or medications. The PEMF has higher tissue penetration than the (IR) laser. All the soft tissues are transparent for the magnetic field. This means the magnetic field is partially obstructed only by the bone

because of its mineral contents e.g. apatite $[\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2]$. On the other hand, 50% of the infrared laser is absorbed by the skin and the other 50% goes to the subcutaneous tissues. The PEMF is less effective than infrared laser therapy in the management of pain. From the above, infra-red laser therapy is more effective but has less penetration capacity. The opposite is PEMF which has more penetration but is less effective. This means the benefit of each one is the drawback to the other [3]. This suggests that the combination of the benefits and addressing the drawbacks of each one may give a novel breakthrough which is the subject of this paper. The mechanism of summation gives a better result than if 2 devices (infrared laser therapy + PEMF) are utilized at the same time. The actual novel breakthrough occurs if the benefits of each one are added and the drawbacks are omitted at the same time. This could only be achieved by the exploit of the mechanics of hydrogen atoms and converting the PEMF into a unipolar system. This was the idea of the patents of the Hybrid system which are (US 9,452,297) & (US 9,757,583) [4, 5]. This paper will discuss the method of exploitation of the properties of hydrogen atoms with the conversion of the PEMF into the unipolar system (*UPEMF*) [6]. This could build a hybrid system that could treat most of the chronic and painful conditions in the elderly with or without the need for medication and/or surgery. The advantage of this method is invaluable because it saves a huge amount of money that is spent yearly on the surgery and/or the medications of this sector of the population. Moreover, it is sometimes much more effective than surgery and/or medical treatment. Furthermore, it is urgently needed for some groups of patients who are unfit for surgery e.g. end-stage renal failure, hepatic failure, or metastatic cancer patients who may be in severe pain and needs just palliative treatment [7]. Thus, this new modality has to be hand in hand with other methods of treatment of chronic and painful conditions in the elderly.

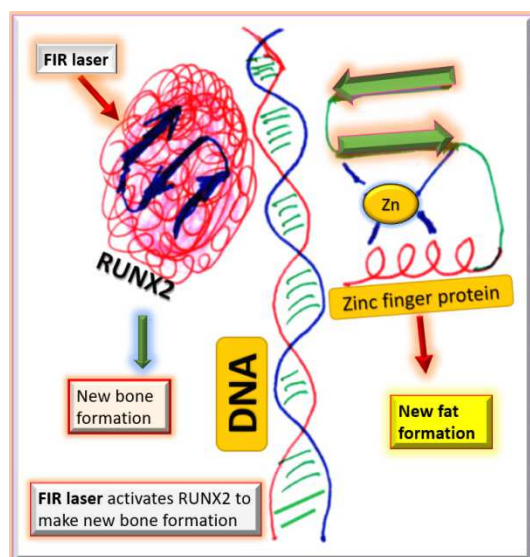


Figure 1. FIR laser can stimulate RUNX2 which enhances new bone formation.

2. Infra-Red Laser Therapy

As said earlier, infra-red laser therapy is perfect for the skin

and very near subcutaneous tissues. It is very effective in the repair of the tissue near the skin but its capacity of penetration is limited and it differs according to the wavelength. The range of infra-red therapy is from 700nm-1mm [8].

2.1. The Mechanism of Action of Infrared Laser

It enhances the action of the mitochondria in the tissue exposed to this type of radiation. The exact mechanism of action is ill-defined but the most probable is via a mild increasing the concentration of nitric oxide (NO) which has a direct stimulatory action on the mitochondrial enzymes [30]. It also causes vasodilation of the blood vessels. With the subsequent enhancement of nutrition and oxygen to damaging tissues helping their repair. Moreover, it increases the venous return with the subsequent washing effect of waste products that are responsible for pain. This is associated with the dramatic improvement of the pain [9, 10].

The effect of infrared laser depends on 3 main factors:

- 1) The intensity of the infrared laser therapy.
- 2) The wavelength is either near or far infra-red laser.
- 3) The pulsation of the infrared laser.

2.2. The Effect of Intensity of the Infrared Laser

The highest efficacy is in the range of 200-400 mW. Paradoxically, the higher the intensity of the infrared laser more than 500 mW may decrease the efficacy. This is why the best is low-level laser therapy which is called LLLT. The possible explanation is that LLLT produces a certain amount of nitric oxide that can stimulate the mitochondrial enzymes. The higher intensity is associated with the production of excess (NO) which blocks the mitochondrial enzymes [11].

2.3. The Effect of Wavelength

The commonest types of infrared laser that are used in medical treatment are the Near & Far infrared lasers. Near-infrared laser (NIR) is the most commonly used in medical treatment. This is because it has the highest penetration capacity. Its wavelength is 700-2500 nm. On the other hand, Far-infrared laser (FIR) is less commonly used in medical treatment because it has low penetration capacity. Its wavelength is about (4um-1mm). It causes the same effect as that of (NIR) in enhancing nitric oxide (NO) production. Thus, it also causes vasodilation and enhances mitochondrial performance. The most fundamental effect of (FIR) laser is its ability to activate (RUNX2) which has an unparalleled effect on increasing the new bone formation. Thus, it could help in the treatment of osteoporosis [12]. Mid-infrared (MID) laser is not usually used as it has only the drawbacks of both NIR & FIR laser and no specific benefits [35].

2.4. The Pulsation of Infrared Laser

It must be differentiated between the pulsation and the frequency. The pulsation is the number that the device could make switch On/Off per second and is called the Hertz (Hz). Recent studies show that the higher the pulsation of the emitted infra-red laser, the higher the tissue penetration. This

does not come cheap but the high pulsating devices are always *very expensive*. Actually, the efficacy of tissue penetration is greatly improved. The higher the pulsation has another benefit of allowing the device to be of a higher intensity without damage to the skin [26, 27]. It must be differentiated between

the pulsation and the frequency. The pulsation depends on the device itself but the frequency is innate in each wavelength. Moreover, it must be noted that frequency is inversely proportional to the wavelength. This is because the speed of light is constant and it is about 300.000 km/sec [28].

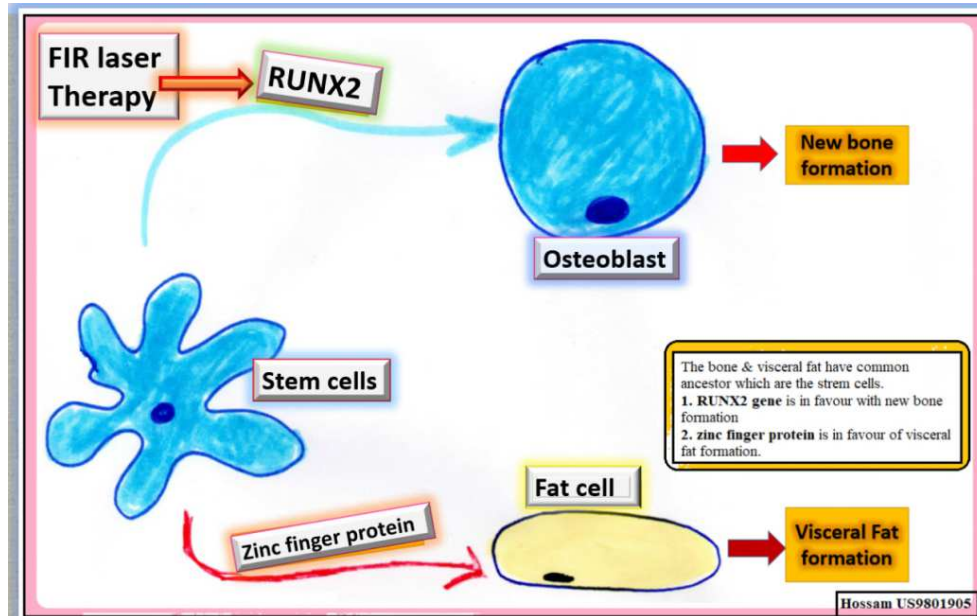


Figure 2. FIR stimulates RUNX2 which directs osteoblasts formation and new bone formation.

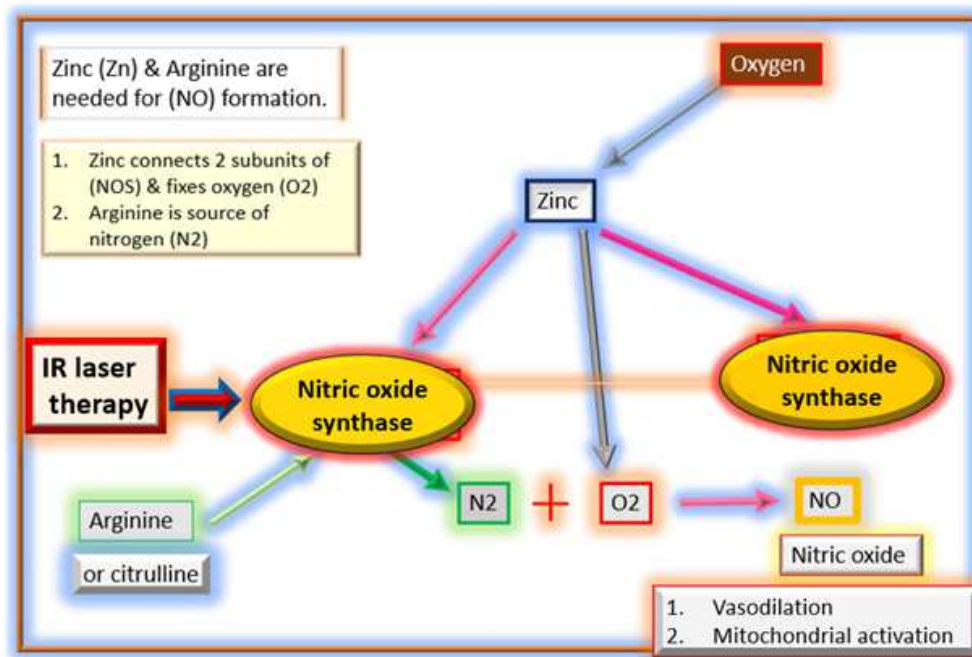


Figure 3. Infra-red laser (IR laser) stimulates nitric oxide synthase (NOS) to produce nitric oxide (NO). This is responsible for vasodilation & mitochondrial activation.

2.5. The Relation Between FIR Laser & (RUNX2)

RUNX2 is the abbreviation of the RUNT-related transcription factor 2. FIR laser *only* can stimulate RUNX2. This means NIR can not stimulate (RUNX2). This is because the NIR laser causes vibration of the peripheral electron only

to emit the extra energy out of the atom. On other hand, FIR causes the peripheral electron to make dual actions at the same time. It causes the peripheral electron to *vibrate* and *spin* as well. The vibration property is responsible for the emission of excess energy to nearby structures in the form of infrared photons while the spinning is responsible for the

local rising of temperature. This is responsible for the stimulation of (RUNX2) (figures 1, 2). The elevated temperature causes a change in the shape of RUNX2 which is the cause of its activation. This is known as a conformational change. It is known that the protein does its function through its external shape [32]. It acts also as a local thermal therapy to help in killing micro-organisms in the case of bacterial infection. It must be noted that the effect of FIR laser on RUNX2 is enhanced by the inhibition of zinc finger protein as shown in (figure 1) [13].

2.6. The Effect of Infra-red Laser on the Peripheral Electron

The infra-red laser excites the peripheral electron of every exposed atom. The mode of the excitation depends on the wavelength [30].

- 1) NIR laser causes the peripheral electron just to vibrate. This means that the electron goes to a higher orbit by the energy that it acquires from the infrared laser. The electron emits this extra energy in the form of infrared photons. The mitochondrial enzymes of the nearby tissues are activated leading to more energy production i.e surplus ATPs.
- 2) FIR laser causes the peripheral electron to vibrate and spin at the same time. The vibration is more or less similar to

the NIR laser. The spinning has a new function to increase the energy inside the atom. This means a partial rise in the temperature of the affected tissue. This temperature rise has a good benefit in killing micro-organisms in case of infection. Moreover, it could conform some protein to work and the best example is the (RUNX2) that increases the new bone formation [14].

3. PEMF

This is the abbreviation of *pulsed electromagnetic field therapy*. This method of treatment was known for 30 years or so but was not famous and not recognized by the FDA. In 2009, NASA granted a US patent (US7179217) for the treatment of chronic degenerative diseases that affect astronauts like muscle wasting, osteoporosis, osteoarthritis, chronic headache, and so on [2]. These diseases are more or less similar to the degenerative diseases that occur in the elderly. Thus, NASA declared that this new method of treatment could be used for the treatment of chronic degenerative diseases of the elderly without the need for surgery or medication. This method is FDA-approved later in the treatment of *osteoporosis* and healing of non-union of bone fracture [15].

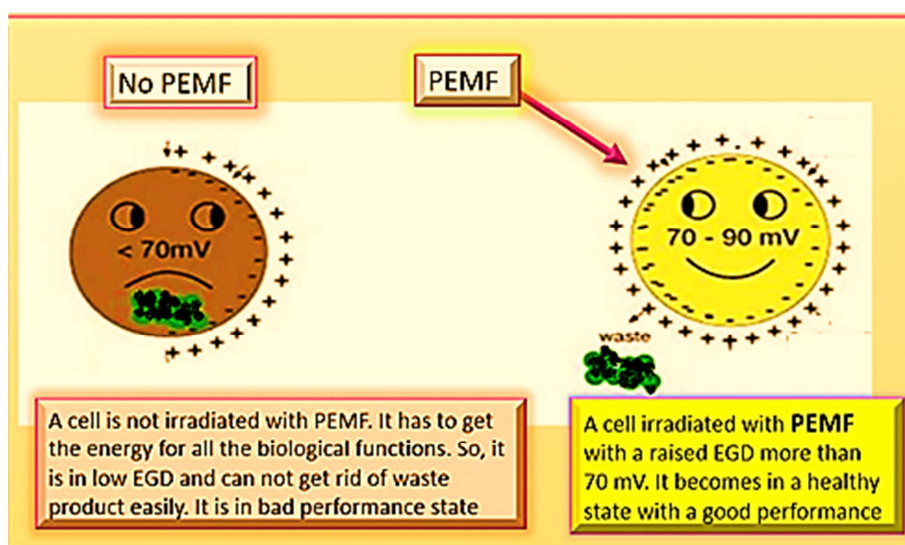


Figure 4. The effect of PEMF on the cells. It increases the electrical gradient difference (EGD) which acts as free energy to the cells.

3.1. The Mechanism of Action of PEMF

The most possible explanation is that it stimulates (NO) formation like that of an infrared laser. Moreover, it raises the electrical gradient difference (EGD) of the cell membrane. It is known that 2/3 of the biological energy is lost in the Na/K pump of the cells. Thus, PEMF by raising of the electrical gradient difference (EGD) acts as charging the exposed cells with free energy (figure 4). Normally, the cell membrane is -70 mV but it is reduced in the diseased conditions to (-50 to -35 mV) according to the degree of the disease process. Exposure of the cells to PEMF causes the cell membrane to raise up to -90 mV. This means that the exposed cells become

charged with new energy for free without a need for mitochondrial ATPs. This is more or less similar to charging the battery. This rise of the electrical gradient difference also can stimulate the dormant stem cells. The activation of stem cells could repair the damaged tissues. However, this method acts as a breakthrough in modern medicine, it still has a drawback. This method is very effective in superficial tissue damage. The deeper the tissue damage, the less its effect. This is because the wave gradually *spread out* and its concentration becomes less and less. Moreover, it is reflected back and can not enter with a good concentration in deep-seated lesions. From this drawback, the unipolar system arises to address this problem (figure 12) [16, 17].

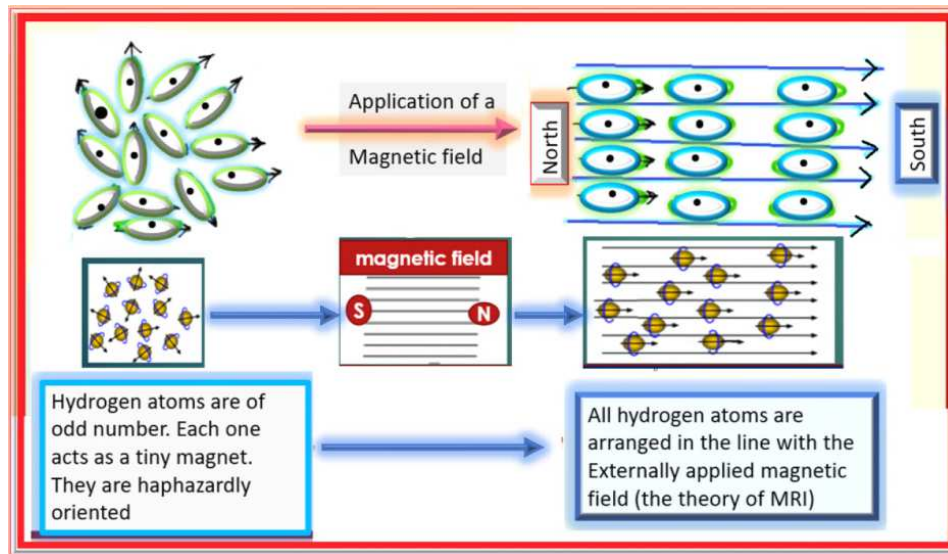


Figure 5. Each Hydrogen atom acts as a tiny magnet. Therefore, they could be arranged by an externally applied magnetic field.

3.2. The Parameters That Control the Efficacy of PEMF

NASA studied this method for 4 years at expense of \$4 million. It is considered the top research center worldwide and its data are invaluable and must be taken into a consideration. The results of the study were the efficacy of the PEMF depends on 3 main parameters which are: the intensity, the frequency, and the shape of the wave [17].

1) The intensity is very important because the higher the intensity is associated with higher tissue penetration, within a certain limit. The most accepted theory is the role of Adey. This role shows that there are 3 windows where the magnetic field becomes synchronized with the body. These are called the 3 biological windows where the magnetic field could enter the body maximally. These

windows occur at 10, 200, or 500 gauss. This means at any of these 3 intensities, the body responds maximally. This also means that 200 gauss is better than 10 gauss. It also means that 500 gauss is better than 200 gauss. This phenomenon is called Adey's biological windows [18].

2) Frequency is also very important. In the early work of Godwin et al [2], they discovered that the magnetic field of the earth is 8-11 Hz. This is similar to the alpha waves of the brain. Later, they discovered that the higher the frequency, the better the results within limits. They concluded that most of the tissues can respond maximally at 30 Hz. Then, a plateau occurs till 50 Hz. After that, the efficacy decreases gradually from 50 to 100 Hz. More than 100 Hz, the condition becomes even more dangerous as the body becomes sensitive to the magnetic field (figure 6) [17].

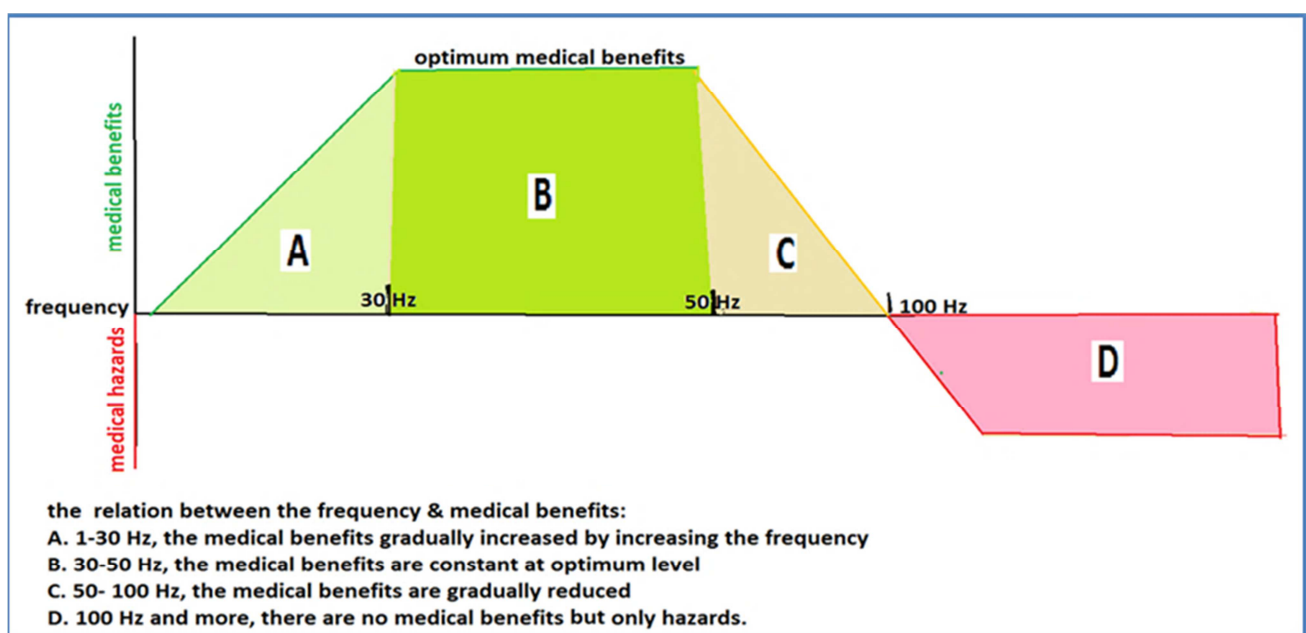


Figure 6. The relation between the frequency and efficacy of extremely low frequent pulsed electromagnetic field.

The shape of the wave is very critical for the efficacy of the device. There are 3 main types of waves. These are sine, saw-shaped, and rectangular waves. The sine wave is the least effective but is the easiest to be generated. The saw-shaped wave is more effective but is more difficult to be adjusted. the most effective is the rectangular wave but is very difficult to be generated. The hybrid patent uses the rectangular waves for the efficacy to be maximal. The possible explanation is that is the magnetic field initiates an electrical gradient difference in the cell membrane (figure 4). In the case of the sine wave, the magnetic field is raised slowly and also is dropped slowly. This slow elevation and drop allow the cells to be adapted and do not show electrical gradient differences. On other hand, the rectangular wave

reaches its top in a few milliseconds and also is dropped very fast. Thus, it gives the cell no chance for adaptation and the electrical gradient difference occurs. The saw-shaped wave is in an intermediate zone between the sine and the rectangular waves [19, 20].

4. The Exploit of the Properties of Hydrogen Atoms

Hydrogen is the most prevalent atom in the universe. It is the simplest atom as it contains only one *proton* and one *electron*. Therefore, it is called an odd number atom. This is because it is the only atom that has no neutron.

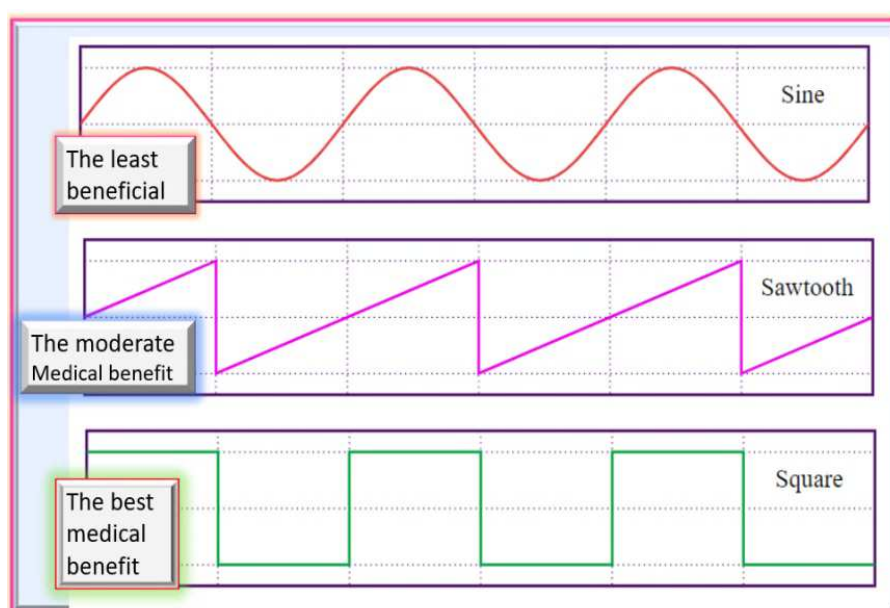


Figure 7. The shapes of the waves of the PEMF affect their efficacy.

4.1. The Nucleus of the Hydrogen Atom Is a Single Proton

As the hydrogen is formed only of one electron & one proton. There is no neutron. Therefore, there is no actual nucleus. All other atoms of the periodic table have nuclei that must contain protons & neutrons. This makes the nucleus to be relatively heavy with no nuclear shift in response to the rotating electron (s) [4, 5]. In the case of the hydrogen atom, there is only one proton. The proton is heavier than the electron by about 1836 times [21, 22]. Despite that, the proton is relatively very light if compared with all other atomic nuclei. This creates what is called a protonic shift. This simply means that not only does the electron rotate around the proton but also the proton itself shows an oscillation. This is called protonic shift (figure 8). This occurs in the central zone of the atom which is called the neutral zone. Outer to the neutral zone is the magnetic zone where the electron rotates. One zone represents the North pole while the other represents the South pole (figure 8). This is because of 2 reasons:

- 1) The proton is very light compared to other atomic nuclei that may have multiple protons & neutrons.
- 2) The hydrogen atom contains only one electron. Because of the electrical & gravitational forces connecting between the electron and proton, the proton shows some shift with each electronic rotation. Therefore, each rotation of electron is associated with a certain degree of oscillation (shift) of the proton. It must be noted that the protonic shift is 1836 smaller than the movement of the electron which reflects the inverse proportion of the weight of the proton to that of the electron [21].

4.2. The Trajectory of the Electron

The electron of the hydrogen atom does not have a spherical trajectory like other atoms but it is more or less elliptical in shape. Moreover, the speed is not constant but shows acceleration & deceleration zones (figure 7). The acceleration occurs when the electron is on its way towards the proton under the effect of the gravitational & electrical forces as if they would collide soon. As said earlier the proton makes its

shift, the electron misses the proton and goes away in the last few femtoseconds. The electron starts a deceleration zone under the effect of the gravitational and electrical forces again. Then, it changes the direction and comes towards the proton again with a new acceleration zone. This cycle is repeated. To sum up, as in figure 8, it would be acceleration towards the proton and deceleration away from the proton. This is why the hydrogen atoms act as if they are tiny magnets that could be arranged under an externally applied magnetic field and this is the basis of magnetic resonance imaging (MRI) [23, 24].

4.3. The Hydrogen Atom Is a Tiny Magnet

According to Faraday Law, the rotation of electrically charged particles is associated with the emission of a magnetic field [33]. On a change in the direction of the rotation, the created magnetic field is flipped to the other pole. Therefore,

each hydrogen atom acts as a tiny magnet as in figure (8). The human body is formed of 60% water [25]. Each water molecule is formed of one atom of oxygen & 2 atoms of hydrogen. The question is why the human body is not magnetized. This is explained in figure 5, where hydrogen atoms are haphazardly arranged [31]. Therefore, the magnetic field of some hydrogen atoms cancels the magnetic field of the other. The net result would be a neutrally magnetic human body. On the other hand, if these hydrogen atoms are exposed to an externally applied magnetic field as in MRI, all hydrogen atoms would be arranged to this external magnetic field as in figure 5. This is the basis of MRI where any internal organ would have a certain degree of opacity according to the hydrogen atom concentration. Therefore, each organ could be easily delineated from the other nearby structures according to its percentage of hydrogen atoms contents.

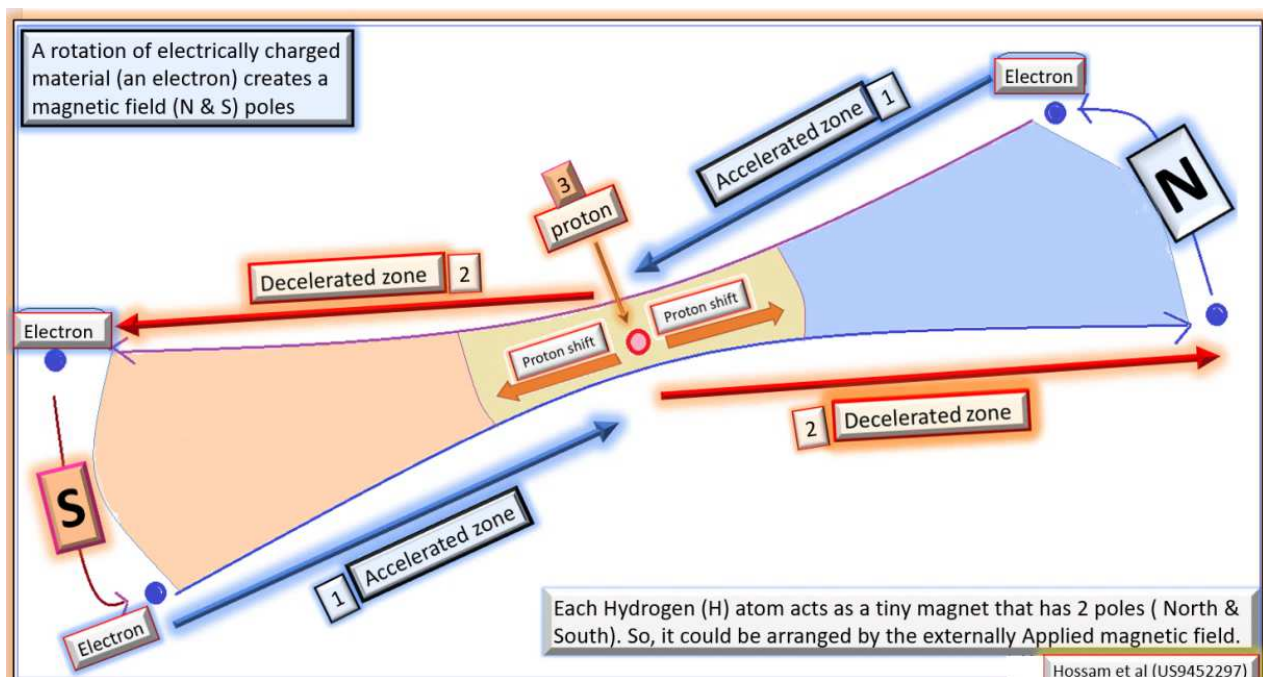


Figure 8. The mechanics of the Hydrogen atom show that each hydrogen atom is a tiny magnet with acceleration and deceleration zones. The most important is a protonic shift in the central neutral zone. Outer to the neutral zone is the magnetic poles. One represents the North pole & the other represent the south pole.

4.4. The Relation Between the Hydrogen Atom and Hybrid System

The hybrid system means a linkage or bonding between {IR laser + PEMF}. There would be some obstacles that make this linkage very difficult or even impossible. These 2 sources of energy have a great difference in wavelength. According to the stimulated emission theory of Einstein in his explanation of the Quantum mechanics, he said 2 wavelengths or more could be summated provided that they are of the same wavelength or frequency [34]. By that theory, Einstein predicted the birth of laser which was discovered later after his death. The frequency of the infrared laser lies in a very wide range of $(3 \times 10^{11} - 4.3 \times 10^{14})$ Hz which is a very high frequency. On the other hand, the frequency of the PEMF is 30-45 Hz as in figure 9. Therefore, it is called an extremely low-frequent magnetic

field (ELFM).

The tissue can synchronize only at these extremely low-frequency waves. The brain, for example, synchronizes at 8-11 Hz which is similar to the frequency of its alpha waves. The secret of the combination of the above 2 different types of waves of a great variation in the frequency is the hydrogen atoms. They are called odd number atoms that each one acts as a tiny magnet. If these hydrogen atoms are arranged by an externally applied magnetic field, they could act as bonds that connect the 2 different waves despite the discrepancy of their wavelengths.

In the other words, IR laser acts on the electron causing it to vibrate while PEMF acts on the axis of the atom which is determined by the proton. Therefore, the above 2 waves of (IR laser & PEMF) have a great variation in frequency but they have a mutual sharing on each component of the atom. The IR

acts on the electron & PEMF acts on the proton of the same hydrogen atom lying in the field. This means that the hydrogen atom acts as the linkage between the 2 waves. It

must be stressed on the PEMF must be unipolar to be able to arrange the magnetic field. If it is not unipolar, the linkage would not occur.

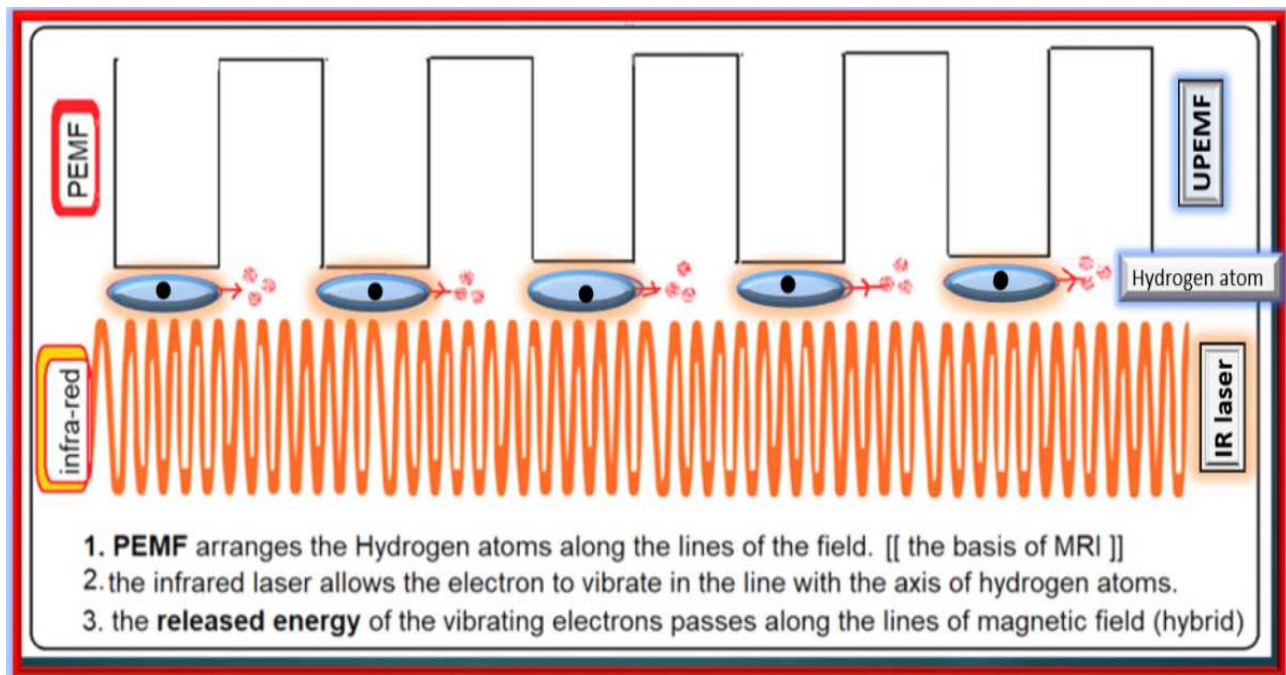


Figure 9. The Hybrid system shows the hydrogen atoms act as bonds that connect between the magnetic field & infrared laser.

5. Discussion

5.1. The Hybrid System (Figure 12)

This means the linkage of both (IR laser + UPEMF) via the orientation of the hydrogen atom. This system contains the medical benefits of both IR laser and that of UPEMF. Moreover, it avoids the disadvantages of both IR laser & PEMF. This method is granted US patents of the subject of this paper. It is believed that NASA declared that the PEMF is a breakthrough in modern medicine. The Hybrid system is much better because it addresses all complications that might occur in IR laser and/or the PEMF if any of them are used alone. This system is a concept-proved in the laboratory of Ottawa University [17]. A master's degree of 2 year-project was done at the University. Again, for the linkage to occur, the magnetic field has to be unipolar. This gave birth to a new concept of the unipolar PEMF (UPEMF) in the US patent (US9452297) [4]. This will be explained in the next paragraph.

5.2. UPEMF

This new method comes to solve the problem of spread out of PEMF. Thus, the emitted magnetic field would be concentrated and could reach the deep-seated lesions of the human body with high concentration. NASA's patent device is a bipolar system. This is why it is spread out and reflected back later to meet the other magnetic pole. In figure 9, the bipolar system of NASA can hardly pass through the full thickness of

the hand of a patient. Then, it spread out and becomes very weak. The method of conversion of the bipolar into a unipolar system needs 2 steps (figure 12):

- 1) It concentrates the emitted magnetic field by making multiple permanent magnets in the gateway of the emitted magnetic field in opposite directions.
- 2) The other magnetic pole is hidden by a metal shielding like mu-metal material. Thus, the emitted magnetic field would not be reflected back to search for the opposite pole. This is because it is already hidden.

Therefore, the emitted magnetic can reach any deep-seated lesion inside the human body with the highest concentration. Moreover, the most important advantage of the unipolar system is it can be linked with an infrared laser to form the hybrid system (figure 12). The linkage could be assembled by the orientation of the hydrogen atom as it will be described later in the mechanism of its action.

5.3. The Mechanism of Action of the Hybrid System

It must be noted that infrared laser works on the electron of the hydrogen atoms leading to its vibration. This means that the electron goes to a higher orbital level. Then, it returns back to its original orbit emitting the excess energy in the form of infrared photons that can be used by the nearby tissues. These photons stimulate the mitochondrial enzymes that enhance energy production with subsequent healing of the tissues. PEMF on the other hand arranges the axis of the hydrogen atoms to be in line with the externally applied magnetic field. Therefore, the hydrogen atoms act as the bonds that connect the waves of infra-red laser & PEMF together.

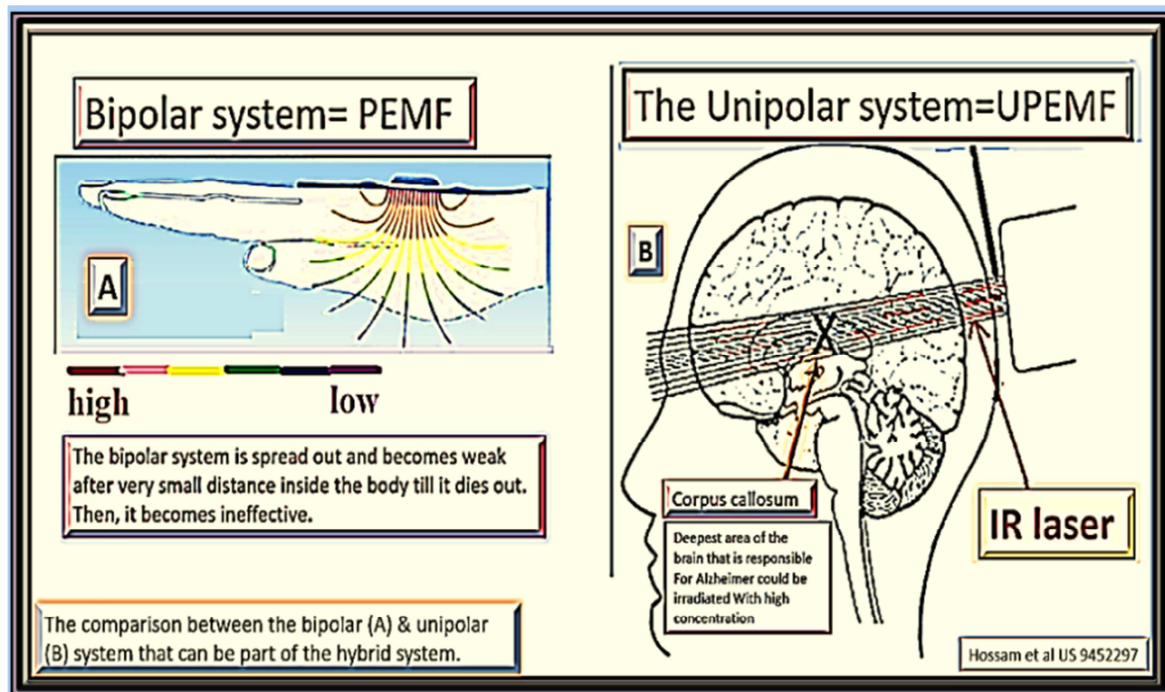


Figure 10. The comparison between the bipolar PEMF & Unipolar ones. (A) The bipolar system is rapidly fading out and becomes very weak. The (B) is the unipolar system that is concentrated for a very long distance and it can be linked by the infrared laser.

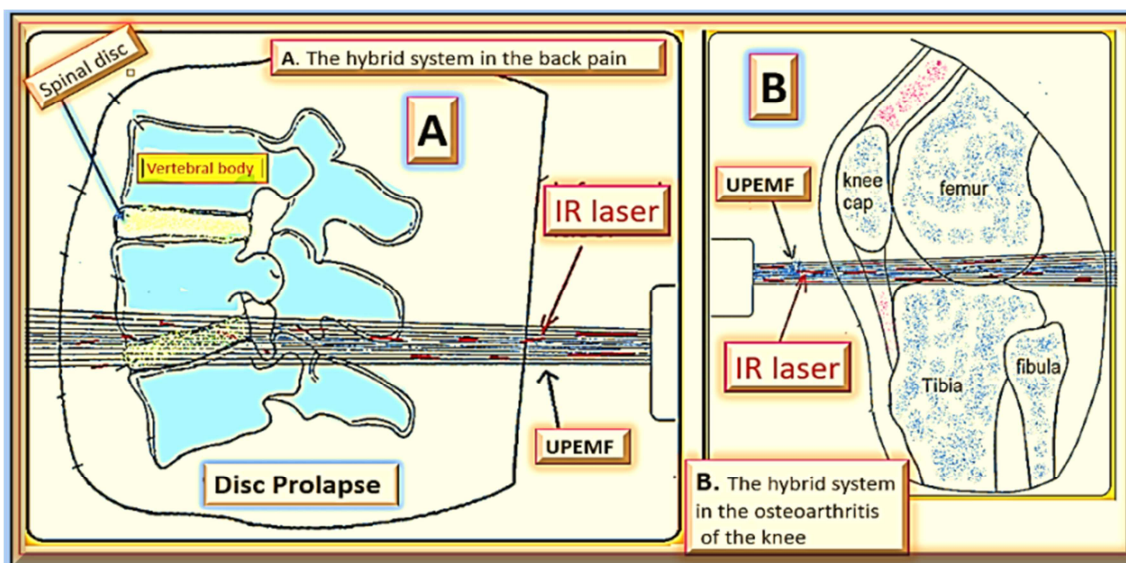


Figure 11. Some examples of degenerative diseases that could be treated by the hybrid system in the elderly. A. The disc prolapse causes chronic low back pain with a referred pain to the back of the lower limb. B. osteoarthritis of the knee is considered the most common type of osteoarthritis.

5.4. The Diseases That Can Be Treated by the Hybrid System

Infrared laser alone succeeded to treat most of the chronic and degenerative diseases in the elderly. These include Alzheimer's, coronary artery diseases, osteoarthritis, low back pain, sciatica, carpal tunnel, plantar fasciitis, and others. The only problem is that the deeper the site of the lesion, the poorer the result of treatment. The PEMF also succeeded in the treatment of the above diseases with variable degrees of success. Therefore, it is expected that a combination of the above 2 methods of treatment may have a better result than the

treatment by any one of them alone. Therefore, it is very logical that the hybrid system which is not only just a combination but also it is a synergism between the 2 types of energy would be much better. Therefore, most of the chronic and degenerative diseases in the elderly could be tried by this new modality.

5.5. Extend the Scope of Diseases That Could Be Treated by the Hybrid

The range of the chronic and degenerative diseases can be extended for the diseases of deep-seated lesions that the

previous prior art devices may fail to manage the pain. Furthermore, It may be tried as a prophylactic measure for the younger sector of patients before the start of the disease process. This method activates the juvenile stem cells in the body and could repair the damaged tissue before the start of the clinical presentation of the disease process. Therefore, this

group of diseased could be aborted at their very early stages of the aging process. This could be achieved because this modality of treatment is cheap, effective, with no side effects if used properly. As said earlier, this new method should be given a good chance to save the huge amount of money that is spent on the health care system of the diseases of the elderly.

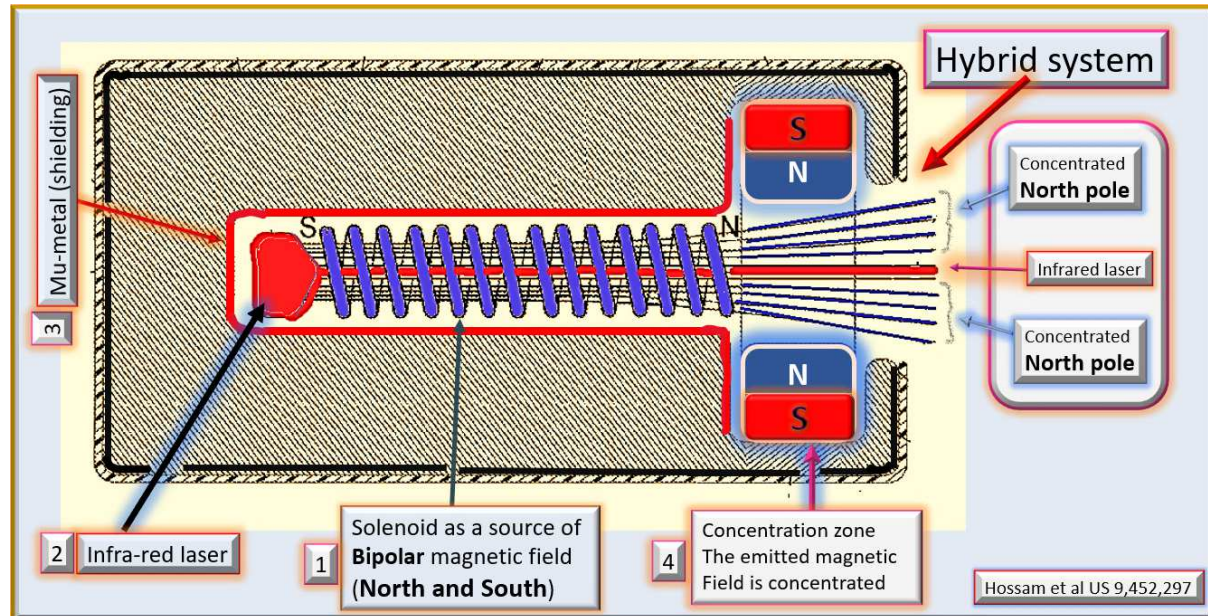


Figure 12. Cut-section of the patented Hybrid device. 1. is a source of a bipolar magnetic field. 2. infrared laser 3. mu-metal shielding material to hide the south pole 4. concentration zone that compresses the north magnetic field. Thus, the allowed beam is only a North magnetic field + infrared laser.

6. Conclusion

The hybrid system is the US-patented new method of treatment that could be used for the treatment of chronic diseases of the elderly. Infra-red laser has a good effect on the treatment of these chronic diseases but it is very limited to more superficial injury. In the cases of deep-seated lesions, the efficacy of the treatment is gradually reduced till it becomes useless. PEMF is another modality developed by NASA and it has a higher penetration capacity than IR laser. On other hand, its efficacy may be less than that of the IR laser. Therefore, the combination of the above 2 methods of treatment is more effective than the utilization of only one of them alone. As said earlier, the advantage of one of them is the drawback of the other. Therefore, the device that could get only the advantages of both of them and get rid of all the drawbacks of both of them would be a breakthrough. The subject patents of this paper are the most qualified to do this function with aid of the orientation of the hydrogen atom in the tissues of the human body. Therefore, there would be a new modality of treatment that would be an effective method of treatment with deeper tissue penetration at the same time. This is because the hydrogen atoms act as hooks or bonds that connect the 2 waves together as one unit even if they are of different wavelengths. This is the idea of the hybrid system. Moreover, these 2 forms of energy potentiate each other. Therefore, this new method of treatment for chronic and refractory diseases in

the elderly is borne. This must be tried in end-stage conditions like heart failure, renal failure, hepatic failure, and IV stage of cancer metastasis. This group of patients may be in severe pain but they are unfit for surgery or even to the side effect of the medical treatment. Thus, this modality may be the 1st choice as it has a great effect on the management of the pain without side effects if properly used.

References

- [1] Pinar Avci, 2013. Low-level laser (light) therapy (LLLT) in skin: stimulating, healing, restoring. *Semin Cutan Med Surg.* Volume 32 (1): 41–52.
- [2] Thomas Goodwin, 2009. Electromagnetic force for enhancing tissue repair. US7179217.
- [3] Ayman M. El-Makakey, 2017. Comparative study of the efficacy of pulsed electromagnetic field and low level laser therapy on mitogen-activated protein kinases. *Biochem Biophys Rep.* Volume 9: 316–321.
- [4] Hossam Mohamed, 2016. Hybrid infra-red laser and pulsed electromagnetic medical apparatus and methods of use. US9452297B2.
- [5] Hossam Mohamed, 2017. Method of use of hybrid infra-red laser and pulsed electromagnetic medical apparatus. US9757583B2.
- [6] Rodney Loudon, 2016. One-dimensional hydrogen atom. *Proc. R. Soc.* Volume 472: (2185). Pages (1-14).

- [7] Christopher R Schneider, 2009. Elective Surgery in Patients with End Stage Renal Disease: What's the Risk? American Surgeons, Volume 75. (9). Page 790-793.
- [8] Aleksandra Cios. 2021. Effect of Different Wavelengths of Laser Irradiation on the Skin Cells. *Int J Mol Sci*. Volume 22 (5): 2437. Pages (1-18).
- [9] Hossam Mohamed. 2017. Method of Orthopedic treatment by Radiation. US9795802 B2.
- [10] Hossam Mohamed. 2017. Method of orthopedic treatment by Radiation. US9579520 B2.
- [11] Howard B Cotler, 2015. The Use of Low-Level Laser Therapy (LLLT) For Musculoskeletal Pain. *MOJ Orthop Rheumatol*. 2 (5): pages 1-16.
- [12] Theodore A Henderson. 2015. Near-infrared photonic energy penetration: can infrared phototherapy effectively reach the human brain?. *Neuropsychiatr Dis Treat*. Volume 11: 2191–2208.
- [13] Ming-Tzu Tsai, 2011. Runx2 and Osterix Gene Expression in Human Bone Marrow Stromal Cells Are Mediated by Far-Infrared Radiation. *Proceedings of the World Congress on Engineering*. Volume III, pages.
- [14] Shang-Ru Tsai, 2017. Biological effects and medical applications of infrared radiation. *J Photochem Photobiol B*. volume 170: pages 197–207.
- [15] Julianne Huegel, 2018. Effects of pulsed electromagnetic field therapy at different frequencies and durations on rotator cuff tendon-to-bone healing in a rat model. *J Shoulder Elbow Surg*. volume 27 (3): pages 553–560.
- [16] C. Andrew. 1993. Beneficial Effects of Electromagnetic Fields. *Journal of Cellular Biochemistry* volume 51: 387-393.
- [17] Yuxiang Jiang. 2018. A unipolar pulse electromagnetic field apparatus for magnetic therapy. *IEEE. IEEE Instrumentation & Measurement Magazine* (Volume: 21, Issue: 5. Pages 41-48.
- [18] MARKO S. MARKOV. 2005. "Biological Windows": A Tribute to W. Ross Adey. *The Environmentalist*, Volume 25, Pages (67–74).
- [19] Fei Teng, 2011. Square or Sine: Finding a Waveform with High Success Rate of Eliciting SSVEP. *Comput Intell Neurosci*. Volume 2011: articles 364385. Pages 1-5.
- [20] Tomás García-Sánchez. 2018. Sine wave electroporation reveals the frequency-dependent response of the biological membranes. *Biochimica et Biophysica Acta (BBA) – Biomembranes*. Volume 1860, Issue 5, Pages 1022-1034.
- [21] Alexander Bolonkin, 2014, *Innovations and New Technologies* (v. 2), Page 202.
- [22] Frank H. Attix. 2015. *Fundamentals: Edition 2*. Page 174.
- [23] Abi Berger, 2002. Magnetic resonance imaging. *BMJ*. Volume 324: page 35.
- [24] Ellen C. Jensen. 2014. Technical Review, Types of Imaging, Part 4—Magnetic Resonance Imaging. *Anatomical Records* Volume 297, Issue 6; Pages 973-978.
- [25] Barry M. Popkin. 2010. Water, Hydration and Health. *Nutrition Reviews*, Volume 68, Issue 8, Pages 439–458.
- [26] Ayan Barbora. 2021. Higher pulse frequency of near-infrared laser irradiation increases penetration depth for novel biomedical applications. *PLoS One*. Volume 16 (1): e0245350.
- [27] Danhong Han, 2018. Penetrating effect of high-intensity infrared laser pulses through body tissue†. *RSC Advances* 8 (56): 32344-32357.
- [28] James M. Hill. 2012. Einstein's special relativity beyond the speed of light. *Proceeding of Royal Society*. Volume 468 Issue 2148. Pages (4174-4192).
- [29] Agnes Keszler, 2017. Red/Near Infrared Light Stimulates Release of an Endothelium Dependent Vasodilator and Rescues Vascular Dysfunction in a Diabetes Model. *Free Radic Biol Med*. Volume 113: Pages 157–164.
- [30] Hiba Omer. 2021. Radiobiological effects and medical applications of non-ionizing radiation. *Saudi J Biol Sci*. 28 (10): 5585–5592.
- [31] André Michaud, 2018. The Hydrogen Atom Fundamental Resonance. *Journal of Modern Physics*, Volume 9, 1052-1110.
- [32] Nadiya M. Teplyuk. 2009. The Osteogenic Transcription Factor Runx2 Controls Genes Involved in Sterol/Steroid Metabolism, Including Cyp11a1 in Osteoblasts. *Mol Endocrinol*. Volume 23 (6): 849–861.
- [33] Lowell T. Wood. 2004. Faraday's law, Lenz's law, and conservation of energy. *American Journal of Physics* 72, (3) Pages (1-5).
- [34] Gerardo Adesso. 2018. Foundations of quantum mechanics and their impact on contemporary society. *Philos Trans a Math Phys Eng Sci.*; volume 376 (2123): e20180112. Pages (1-3).
- [35] Caerwyn Ash. 2017. Effect of wavelength and beam width on penetration in light-tissue interaction using computational methods. *Lasers Med Sci*. Volume 32 (8): 1909–1918.