

III.

# Introduction to RHUMART® Electrophysiology

***A Scientific Explanation of the RHUMART® Phenomenon***

***By Dr. Roland A. Drolet, Ph.D.***

## ***Introduction***

The **RHUMART® system** first appeared in Canada in 1980.

A new system of cell conditioning, RHUMART® uses electro-magnetic wave impulses that are almost identical to the nerve impulses which control every life process in the human body.

The new system was designed,

developed, perfected and tested by Dr. Roland A. Drolet, doctor of biomedical engineering, and graduate of Laval University (B.Sc.A., engineering physics, 1967) and of the University of Toronto (Ph.D., 1971).

The usefulness of this system has been demonstrated in the course of a scientific study based on 450 cases involving

**arthritis, arthrosis, stress, poor circulation, wounds, insomnia, chronic migraines, backaches, sprains, fractures, sports injuries and other sources of pain.** This study was carried out by clinicians and independent researchers in 1980 and 1981. The results of this study were confirmed by a CROP scientific survey on 1001 owners and users of the RHUMART® Self-Health

system in november 1991.

It is important to note, however, that the results obtained with the **RHUMART® system** have been significantly improved using the ***ultra-simplified operating instructions*** described briefly on the next page.



## ***Ultra-simplified Operating Instructions for the RHUMART<sup>®</sup> system (summary)***

Over the course of the past seven years, we have refined and simplified the operation of the conditioner.

This extraordinary simplification has been made possible by the fact that the procedure is based primarily on selecting the appropriate RHUMART<sup>®</sup> "wave train" modulation in order to achieve the desired physiological effects.

As far as the **optimal amplitude** or intensity of the wave is concerned, this *depends on the individual undergoing the conditioning session*. However, there is a very well-defined and limited range of RHUMART<sup>®</sup> wave amplitudes from which to choose.

*A standard RHUMART<sup>®</sup> conditioning session takes ten (10) minutes* once a day or every other day, depending on the RHUMART<sup>®</sup> system used. However, conditioning sessions involving the brain and those using local applicators (known as

MINI-4A) are initially only **five minutes** long, while "severe cases" involving rheumatoid arthritis, arthrosis, serious sports injuries, or terminal cancer may require RHUMART<sup>®</sup> conditioning sessions of **15, 20 or even 30 minutes** duration, depending on the seriousness of the case and the tolerance of the subject.

*It is not necessary for the subject to get undressed for the conditioning sessions; the RHUMART<sup>®</sup> wave bypasses clothing and penetrates each living cell - operating even at the subcellular level - in every part of the body.* It is necessary only to remove jewelry, belts and ferromagnetic accessories. Even metal *bone plates* used by orthopedists to immobilize fractured segments do not interfere with RHUMART<sup>®</sup> conditionings.

## ***The "RHUMART<sup>®</sup> phenomenon"***

Why do we speak about a "RHUMART<sup>®</sup> phenomenon"? In order to answer this question we must first explain what we mean by a health phenomenon.

*To me, a phenomenon in the health field refers to spectacular, unusual results obtained in "a very short time" which cause many people to suspect divine intervention because we can find no scientific explanation that is acceptable in the eyes of current medical "science."*

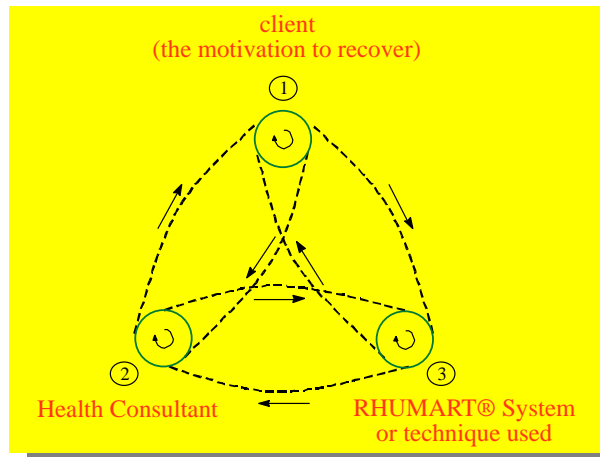
It is according to this strict definition that hundreds of user-clients of the RHUMART<sup>®</sup> system speak of the **"RHUMART<sup>®</sup> phenomenon."** To date, no one - no doctor, professor, medical researcher, or expert of any kind - has been able to offer a scientific explanation for the spectacular and, to say the least, unusual results that have been obtained with the RHUMART<sup>®</sup> system. No one, that is, besides its inventor, who has only recently decided to make public the **scientific explanation of the RHUMART<sup>®</sup> phenomenon.**

Here is that historic explanation.

## The Scientific Explanation of the "RHUMART® phenomenon"

Before discussing the basic scientific explanation of the **RHUMART®** phenomenon, let's take a look at a number of different hypothesis which I developed over the past twenty years (1967-1991) in the course of my research on **the phenomenon of healing in general**. These conclusions are presented both for their historical interest and for their intrinsic value in the confirmation of the basic scientific explanation which finally emerged from my studies.

### • The Three Factors Involved in health recovery



**Figure A: The RHUMART® Triangle or The Three Factors Involved in health recovery**

1. The subject's motivation to recover
2. The "placebo" effect
3. The specific effect of the RHUMART® system

#### 1. The Motivation to be Cured

There is no question that the *subject's motivation* plays an important role in the curing of many types of health problem, both minor and major. However, it is obvious that every person who has undergone **RHUMART®** conditioning was already motivated, since they had all tried at least one other method (medicine, chiropractic, or acupuncture, for example) before trying **RHUMART®**. This factor explains only a small percentage of the results obtained.

#### 2. The "positive" Placebo Effect

The same reasoning applies to the **placebo effect** produced by the health consultants who offer **RHUMART®** conditioning. Clients were subject to the same placebo effect with other health professionals and the desired results were not achieved. If we could explain *all of the spectacular results* obtained with the **RHUMART®** system by the placebo effect, we would be forced to conclude that the users of the **RHUMART®** system must be "superhuman" to inspire such confidence and such "amazing placebo effects." And I seriously doubt that that is the case.

### 3. The Specific Effects of the RHUMART® System

The only possible scientific explanation left involves the specific **effects of the RHUMART® system**. We therefore need to take a look at just what these effects really are.

#### The Principle Physiological Effects of the RHUMART® System:

- It produces **a relaxation of the nervous system**;
- There is a resulting **reduction of pain and stress**;
- The relaxation of the nervous system causes **vasodilation** in the area conditioned, reducing **peripheral resistance and improving blood circulation**;
- This reduction in peripheral resistance lightens the mechanical workload of the heart and **helps to normalize systemic blood pressure, which in turn tends to resolve** hypertension, even if it has been diagnosed as chronic;
- Finally, the improvement in blood circulation causes **gradual resolution of inflammation, normalization of local temperature** and a beneficial effect on **cell nutrition**;
- As a result, **physiological cell repair** and **regeneration** in general are stimulated.

And there you have our first "attempt" to offer a scientific explanation of the "**RHUMART® phenomenon**."

## The Resonance of the RHUMART® Wave with the Human Nervous System and Living Cells

*The wave form* of the RHUMART® impulse is so much like that of the nerve impulse produced by the human body that it is sometimes hard to tell them apart! And we know that *the nerve impulses control every biological function, organ, gland and life process, including the immune system.*

It is therefore tempting to conclude that the RHUMART® system could, in theory, *control or help to control all of the life processes* - from the causes of pain to cell regeneration and the resolution of hypertension.

One very important question remains in the minds of scientists, however: **Why is it necessary to use a very precise range of RHUMART® wave intensities** in order to achieve the spectacular results that we have seen?

In more scientific terms, the "mystery" question is this: *Why must the range of RHUMART® microcurrents induced be between .5 and 20  $\mu\text{A}/\text{cm}^2$  and why are currents which don't fit within this "magic range" not only less efficient, but sometimes completely incapable of producing the amazing*

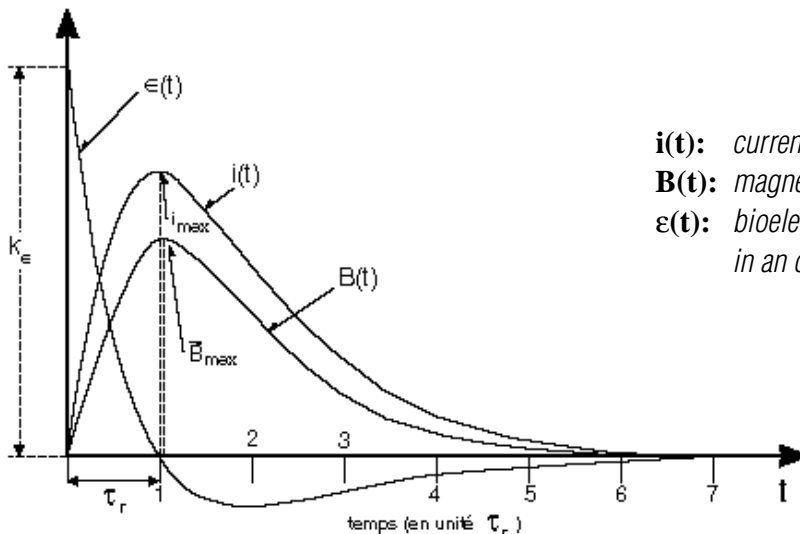
*results produced by currents within this narrow range?*

This current density is lower than that required by most people for normal sensory perception (approximately  $60 \mu\text{A}/\text{cm}^2$ ).

The most effective current density for the RHUMART® impulse ( $20 \mu\text{A}/\text{cm}^2$ , crest value) is therefore two or three times lower than the current impulse density directly perceptible by human beings, (such as that of muscle contractions in the arm).

It is also interesting to note that approximately 50% of the people with no major muscular or arthritic inflammation feel *a very slight "tickling" sensation* when stimulated by the **RHUMART® physiological conditioner.**

We are now getting close to the basic scientific explanation of the **RHUMART®** phenomenon.



$i(t)$ : current in the applicator  
 $B(t)$ : magnetic field created  
 $\epsilon(t)$ : bioelectrical potential induced  
in an open circuit

**Figure B:** "Visual" representation of the RHUMART® impulse

## • The Scientific Explanation that Transcends the RHUMART® "phenomenon"

In 1978 I quantified the **RHUMART® phenomenon** by measuring **the intensity and the wave form of the current** induced in the arms of a man placed inside the RHUMART® global applicator (a hollow cylinder 25 cm. wide with a diameter of 50 cm., called the "MAXI.")

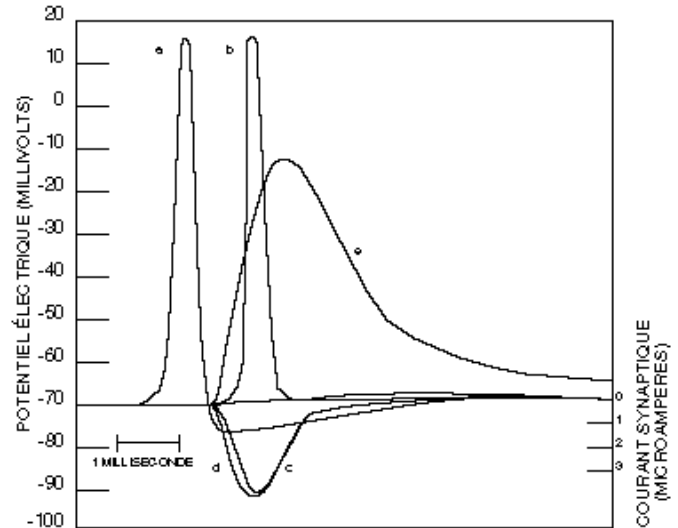
Artifacts were minimized, and the RHUMART® wave form induced was that predicted by **MAXWELL'S electromagnetic theory as applied to the RHUMART® wave** (see my discussion of the five electromagnetic LAWS of RHUMART® cell regeneration, Section IV).

As for the **crest amplitude** of the induced RHUMART® microcurrents, we obtained a **measured value** of approximately  $20 \mu\text{A}/\text{cm}^2$  - the same value that **we had predicted using the five electromagnetic LAWS of RHUMART® regeneration.**

Four years later, in the course of my on-going search for irrefutable scientific explanations, I came across the October 1982 issue of "Scientific American" with a very impressive article titled *"Calcium in Synaptic Transmission: A current of calcium ions triggers the passage of signals from one nerve cell to another."*

Knowing the importance of **synaptic transmission and of the role of calcium** in living organisms in general, I quickly devoured this very substantial and well-written article; I was anxious to **compare the intensity and wave form of the calcium ion microcurrent impulses involved in synaptic transmission with RHUMART® impulses induced in the human body.** After a close reading and analysis of this article, I could hardly believe my eyes, for not only is *the wave form of a nerve's electric potential almost identical to the RHUMART® wave form, but the wave form of the calcium ion current impulses that trigger the passage of the nerve impulse from one nerve to another is also almost identical to that of the RHUMART® wave.*

I was only half convinced, however, for I realized that if the calcium ion microcurrents were significantly smaller or larger than the induced RHUMART® microcurrent impulses, then I still had a way to go in my search for a basic scientific explanation of the RHUMART® phenomenon.



**Figure C: The Electrical Impulses of the Nervous System**

according to R.R. Llinás, *Sc. American*, October 1982;

- **Curve (a)** shows a presynaptic natural action potential (in millivolts);
- **Curve (b)** Shows a postsynaptic natural action potential (in millivolts);
- **Curves (c) and (d)** show two types of current impulses across the postsynaptic membrane (in microamperes,  $\mu\text{A}$ )
- **Curve (e)** illustrates the postsynaptic electric potential altered by nerve-blocking drugs

However, using **elementary mathematical calculations** based on my experimental data and Rodolfo R. Llinás' findings (Sc.Am. Oct. 82) **I was able to prove scientifically that the density of the current of  $\text{Ca}^{++}$  ions necessary to trigger interneuronal synaptic transmission is approximately  $20 \mu\text{A}/\text{cm}^2$ .** That is exactly the size of the microcurrents induced by the RHUMART® regenerator. Remarkable!

The basic implications of this discovery are almost limitless!

We now have the *basic scientific explanation of all of the amazing results obtained with this incredible system!* By acting directly to trigger synaptic transmission (in the same way as  $\text{Ca}^{++}$  ion impulses), the RHUMART® regenerator fully earns its LETTERS OF NOBILITY.

To illustrate *the crucial role played by synaptic transmission in the control of every life process*, I quote Richard J. Wurtman's definition of neurotransmitters: (Sc. Am., April, 1982).

*“Neurotransmitters: substances that are released from a neuron, or nerve cell, when it fires. The*

*neurotransmitter thereby conveys the nerve impulse across a synapse to either another neuron, a muscle cell or a secretory cell”.*

The following calculations, based on the information in Rodolfo R. Llinás' article, support my conclusions:

### Calculations of Dr. Roland A. Drolet

based on the information contained in the article by R.R. Llinás

The "giant" synapse of the squid *Loligo pealii*... described by R.R. Llinás is cylindrical. Its diameter (D) is approximately 0.5 mm. (see page 58, Llinás, Sc.Am., Oct. 1982) and its length (L) is approximately 0.7 mm. (p. 56 of the same article).

*The surface (S) of this cylindrical synapse therefore equals:*

$$S = \pi DL; \text{ or } S = \pi \times 0.5 \times 0.7 \text{ mm}^2 \quad 1.1 \text{ mm}^2.$$

*The current density of the  $\text{Ca}^{++}$  ion is therefore approximately:*

$$j_{\text{Ca}^{++}} = \frac{200 \text{ nA}}{1.1 \text{ mm}^2} \quad 20 \mu\text{A}/\text{cm}^2$$

This calculation is based on the fact that the total  $\text{Ca}^{++}$  ion current throughout the cylindrical synapse is approximately 200 nA (see page 62 of Llinás' article) and the surface of the synapse is approximately 1.1  $\text{mm}^2$ .

**This maximum density value of the  $\text{Ca}^{++}$  current (20  $\mu\text{A}/\text{cm}^2$ ) is identical to the maximum density of the current of the induced RHUMART® impulse, as measured during a "hands on" experiment I conducted with a**

**subject placed inside the "MAXI" RHUMART® applicator powered by the RHUMART® MBI-3000 bioelectrical controller with the amplitude "A" set at the maximum level.**





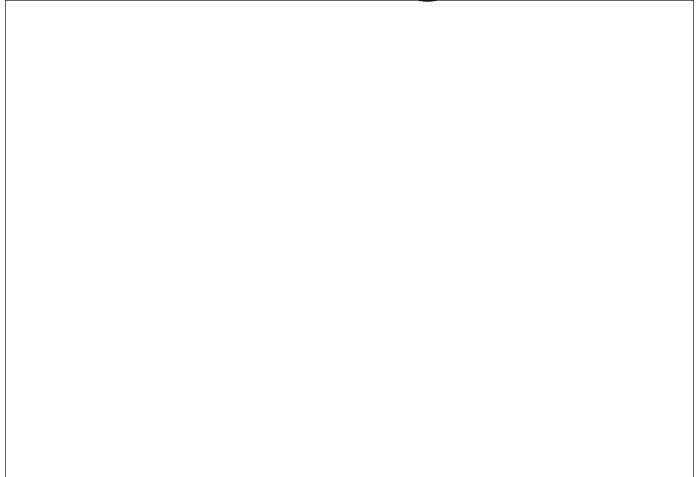
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# IV.

# RHUMART® Bio-Physics

Dr. Roland A. Drolet, Ph.D.



## • THE SCIENTIFIC BASIS

- The RHUMART® triangle: the three factors involved in health recovery
- From the control of a lunar module to the control of living cells
- The major importance of bioelectricity to the future of Health

## • RHUMART® Bio-Physics:

- The unique advantages of RHUMART®
  - A: **The RHUMART® impulse** and its measurement
  - B: **Absolute measurement** of the RHUMART® magnetic field using man as the detector
  - C: **Analogical model** of living cells
  - D: **The 5 electromagnetic LAWS** of RHUMART® cell regeneration

*1<sup>st</sup> -- The electric current impulse  $i(t)$  circulating in a RHUMART® applicator*

*2<sup>nd</sup> -- The magnetic field impulse  $B(t)$  created near a RHUMART® applicator*

*3<sup>rd</sup> -- The bioelectric potential  $\epsilon(t)$ , induced in an open circuit (with surface  $S$ ) by the magnetic field impulse*

*4<sup>th</sup> -- The maximum microcurrent impulse induced in the human body*

*5<sup>th</sup> -- The mathematical expression of the microcurrent impulse*

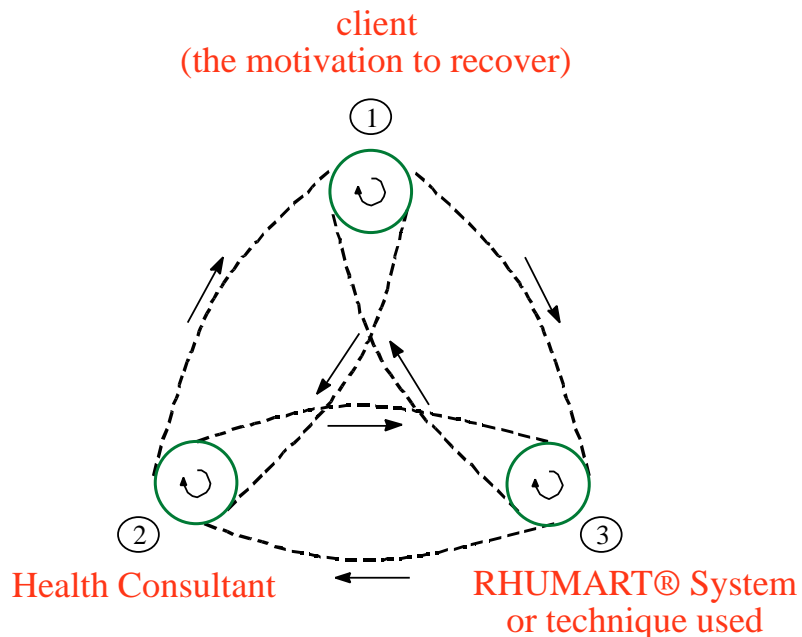
## E: Technical specifications

- simplified definition of the MODULATION (n)
- visual representation of the impulses
- strength of power source and energy flux absorbed by the subject ( $\mu\text{W}/\text{cm}^2$ )

# THE SCIENTIFIC BASIS

- **The RHUMART® Triangle**  
**The Three Factors Involved in health recovery**

Dr. Roland A. Drolet, Ph.D.



The **RHUMART®** triangle is based on the following modern-day scientific principles:

1. Wave mechanics - the interdependence of every part of the universe.
2. The nature of **Thought - Suggestion - Hypnotherapy**.
3. The resonance of the **RHUMART®** wave with **living cells**.
4. Dr. Roland A. Drolet's **SCHEMATIC DIAGRAM OF MAN** briefly described herein after.

- **From the Control of a Lunar Module to the Control of Living Cells**

**In the same way that it is possible to control a lunar module 400,000 km from the earth, it is also possible to control living cells with electromagnetic impulses.**

Now, what kind of natural electromagnetic impulse could be more in "sync" with living cells than **the natural impulses of the nervous system?**

As a matter of fact, every cell in the human body responds more or less automatically to these **natural, biological electromagnetic "commands."**

**In theory, it should therefore be possible to control living cells "at will," simply by introducing electromagnetic impulses similar to those of the nervous system into the human body.**

**In practice, that is exactly what the RHUMART® bioelectrical system manages to do; in fact, the impulses it produces are recognized by the living cells of the body as effective control signals.**

### **An "Intelligent" Source of Electromagnetic Impulses**

The **RHUMART®** electromagnetic impulses are so effective that the cells are unable to determine whether they originate in the human brain or in another **"intelligent" source of electromagnetic impulses** which can be adapted to fit the specific needs of the cells.

### **Inducing Na, K and Ca Microcurrent Impulses**

**The RHUMART® system differs from conventional methods in that it uses the impulses of a specific low-frequency wave to induce minimal currents throughout the entire body, including the bones. The induced impulses are similar to the natural action potential found in the nervous system. This is why RHUMART® is known, with good reason, as a physiological system.**

The currents induced, measured in microamperes ( $\mu\text{A}$ ), are comparable to the body's own currents, which are associated with interneuronal synaptic transmission; they thus allow noninvasive interaction at the level of the ionic transfer across cellular membranes. The ions primarily concerned with this interaction are **sodium, potassium and calcium**. **The normalization of the cells' bioelectric potential** also leads to improved **oxygenation** and better **cell nutrition**.

### **The RHUMART<sup>®</sup> System: Noninvasive and Painless**

There are two ways to induce such microcurrents in the body: one is **invasive** and the other is **noninvasive**. The invasive method normally entails the **implantation of electrodes to allow the circulation of very weak currents**. Of course this method usually requires surgery and therefore involves a certain risk of infection and post-operative trauma.

At the other extreme, **the noninvasive approach used with the RHUMART<sup>®</sup> system** *is by far the more elegant* of the two, since it generally causes no pain or inconvenience to the user, who doesn't even need to get undressed! The mini-impulses are induced in the body using low-frequency electromagnetic induction.

### **In Summary:**

**The RHUMART<sup>®</sup> system induces low-frequency electromagnetic wave impulses which stimulate normal cell regeneration and accelerate the resolution of inflammation. It encourages the growth, maintenance and healing of living cells, soothes muscle pain and stiffness, and improves tissue oxygenation and blood circulation.**

**The system was not designed to treat any specific health problem, but is rather a new method of "controlling" living cells and promoting health. The system uses quasi-"biological" wave impulses that we call... «L'étincelle-de-Vie-RHUMART<sup>®</sup> (see the Section titled "RHUMART<sup>®</sup> Bio-Physics-A" for a view of the RHUMART<sup>®</sup> wave form as photographed on an oscilloscope CRT screen).**

## • ***The Major Importance of Bioelectricity to the Future of Health***

The effectiveness of low-frequency specific waves and of bioelectricity has now been firmly established at both the clinical and the experimental levels<sup>1</sup>.

One of the first to use electricity to heal fractures not responding to any other type of treatment was **Dr. Andrew Bassett**, an orthopedic surgeon at Columbia Presbyterian Medical Center in New York.

**Dr. Robert O. Becker** of the Veterans Administration Hospital in Syracuse, N.Y. is also convinced that:

***"It is time that the medical community accepted the idea that the ability to regenerate almost every kind of tissue - including the brain, the spine, the peripheral nerves, the fingers, entire limbs and organs - is now within the reach of human beings."***

*According to Dr. Becker, if we can understand the mechanism that stimulates and controls regeneration in the salamander, there is absolutely no reason that people should not be able to accomplish the same thing.<sup>2</sup>*

In the course of his research on animals, Dr. Bassett learned that

**electricity systematically doubles and even triples the growth rate of peripheral nerves in limbs.<sup>2</sup>**

**Dr. Marcus Singer** of the Case Western Reserve University in Cleveland, Ohio, proved in turn that **in order for regeneration to occur spontaneously, nerve tissue must constitute at least one third of the total tissue mass of a limb.** In addition, his research indicates that if the mass of nerve tissue is large enough, the intrinsically induced continuous voltage may be enough to initiate complete regeneration before scar tissue is formed. **Dr. Singer also demonstrated experimentally that the application of low-level electric currents to a rat's forepaw causes the formation of a blastema;** he concluded that the blastema arose from nucleated cells in the bone marrow.<sup>2</sup>

The blastema is composed of nonspecialized cells that later specialize in order to regenerate muscle and bone tissue, as well as the peripheral nerves necessary to reconstitute the limb. This research has major implications for the study of regeneration:

***Human beings have not lost the ability to regenerate! It is only the control factor which has been lost in the course of evolution. And everything points to the fact that bioelectricity is this missing control factor.***

Dr. Walter Booker and Dr. E. B. Chung of Howard University in Washington, D.C. successfully "treat" burn victims using pulsed electromagnetic fields.<sup>2</sup> **This technique not only speeds the healing process, but it reduces the inflammation surrounding the burned area.** According to *Dr. Chung, the patients experience immediate relief after the very first session.*

**Very often in medicine a new treatment is adopted if it is effective and does not cause undesirable side effects, even if the exact cause of its success is not fully understood.**

Most experts agree that bioelectricity will soon hold a place of honour in the treatment of tissues with latent regenerative abilities such as bones, skin and peripheral nerves<sup>2</sup>; the potential of the RHUMART® wave is almost limitless (see the RHUMART® Index and the results of the CROP scientific survey).

The use of RHUMART® bioelectricity could engender an extraordinary revolution in the control of chronic illness and physical disabilities. *There is not one area of medical specialization that will not benefit from bioelectricity, this remarkable "regulator" of the life processes.<sup>2</sup>*

The use of low-frequency waves is also based on the following physical and physiological principles: **in many pathological states the membrane potential of affected cells differs from that of healthy cells. The magnetic fields traversing each of the body cells stimulate the tissular ions and the colloidal systems in such a way that they synchronize with the magnetic impulses<sup>3</sup>, and the membrane potential is thereby normalized. There is a resultant improvement in ionic dynamics and thus an improvement in oxygenation and cellular nutrition as well as a reinforcement of the natural anti-inflammatory mechanisms of the body.**

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- 2 **McAuliffe, K.**, op. cit.
- 3 **Adey, W.R. et al.**, op. cit.
- McAuliffe, K.**, op. cit.
- 4 **Adey, W.R. et al.**, op. cit.
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# • The Unique Advantages of RHUMART®

## RHUMART® - What is it?

The RHUMART® system differs from diathermy, microwaves, "magnetotherapy," shortwaves, ultrasound and stimulation with a continuous current. It is a noninvasive system using specific, patented, low-frequency bioelectric wave impulses to stimulate *normal cell regeneration* and *accelerate the resolution of inflammation*; it promotes the growth, maintenance and healing of living cells, soothes muscle aches and stiffness, and improves tissue oxygenation and blood circulation.

## A Wide Choice of RHUMART® Wave Control Parameters

The intensity of the RHUMART® wave, its direction, its frequency and its spatial gradient can all be controlled using the controls on the generator and the *field diagrams*<sup>1</sup> provided for each applicator. As a result of this flexibility, the RHUMART® wave can be concentrated on the precise part of the body you wish to condition.

## Field Diagrams<sup>1</sup>

The field diagrams allow you to select the desired combination of wave intensity, direction and spatial gradient both within and on the periphery of the applicators.

## An "Athermic" System

The superiority of low-frequency conditioning over high-frequency treatments or diathermy has often been demonstrated. When high-frequency waves are used to treat arthritic joints, for example, they can cause an undue increase in temperature in the diseased site, resulting in undesirable side effects such as degeneration of the cartilage.<sup>2</sup> The purely physiological effects of the RHUMART® waves make RHUMART® a superior system for the control of a variety of different health problems and the improvement of Quality of Life.

## Multiple Applications

Low-frequency waves are used throughout the world with a great deal of success in orthopedics, rheumatology and traumatology. (See the list of scientific references and the RHUMART® Index.) However, the RHUMART® wave is the one with the greatest biological compatibility and effectiveness.

## Unique Wave Form

The patented RHUMART® wave form is absolutely unique. Its amplitude or induced intensity simulates the calcium ion (Ca<sup>++</sup>) impulses that are absolutely essential to the transmission of nerve impulses.

## Noninvasive System

The resonance between the RHUMART® wave and that of the nervous system makes it possible to induce physiological effects. The RHUMART® system does not require implants. With no negative side effects and no risk of infection, it is fully compatible with most natural health-control methods.

## Simple to Use

Although RHUMART® must be used according to the manufacturer's instruction, operating the system is no more difficult than tuning a radio. It is a simple procedure for the subject to adjust the conditioning parameters to suit his or her own individual needs. This procedure is well explained in the Operating Guide.

## Safety

The system is completely safe when used according to the manufacturer's instructions.

## Mobility

The system is light and compact and easy to carry. It can be used in any room equipped with an electric outlet or the appropriate electric batteries; there is no need to rearrange your furniture.

## Comfort and Economy

RHUMART® conditioning is generally painless and worry-free. Users appreciate the fact that they don't have to get undressed, since they are more comfortable and home sessions are easier to take compared to visiting a clinic.

1 See "The RHUMART® History in this Journal.

2 **Fiebel, A. and F. Avital.** "Deep Heating of Joints: a Reconsideration." *Arch. Phys. Med. Rehabil.* 57, Nov. 1976.

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