

Abstract This paper describes theory and clinical research in the use of low levels of direct electrical current on the eye to treat retinal diseases and results from the first 43 patients (65 eyes) treated.

Key Words Macular degeneration, retinal disease, bioelectromagnetic therapy, electromagnetism, syntonics

The author has invented and patented a bioelectronic device to treat retinal disease based on experience in prescribing color therapy through the eyes (syntonics) which had produced improved visual acuity and visual fields in patients with macular degeneration and retinitis pigmentosa. The scientific theory of using electromagnetic energy for treatment will be discussed, a brief overview of literature supporting this theory will be presented followed by results showing significant improvement in visual acuity and visual fields. Another goal is to stimulate further research and collaboration in the area of treatment.

Macular degeneration is the leading cause of blindness among the elderly, affecting 30% of males and 25% of females by age 75.

Early signs include retinal pigmentary changes, drusen, lipofusion deposits, exudative elevation and eventual pigment epithelium breakup, scarring and atrophy. Ten percent is of the "wet" variety while 90% is of the "dry" causing central visual distortion as demonstrated by Amsler Grid testing.

Treatment now consists of laser surgery to limit the spread of the degeneration.

Disease, in terms of electromagnetic (EM) theory, is based on the idea that all cells are surrounded by an EM field, and that the vibration and mode of motion of diseased cells are out of equilibrium; that cells lose their ability to absorb frequencies and maintain equilibrium.

Historically, blue-green light has been used to treat macular degeneration. In the 1920's Dr. Harry Riley Spittler, the founder of syntonics, also used direct current electricity on the eye to treat amblyopia, cataracts, chalazion, conjunctivitis and corneal

dystrophy. He found that 0.08-0.1 micro-amp of DC through the eye was necessary for the eye to transmit energy. If DC is put into the system where it is lacking, signal processing from the retina to the brain is amplified.

Old syntonics literature reports that EM stimulation may have the following effects:

- Stimulate the blood & lymph systems.
- Increase drainage in lymphatic system.
- Animate the blood.
- Eliminate dead cells.
- Change acid-base balance in blood.
- Cause vasodilation or constriction.
- Produce sodium hydroxide or hydrochloric acid.
- Change neuron impulses.
- Decrease functional irritation to nerves.
- Balance the autonomic.
- Tissue changes.
- Temperature gradients.
- Stimulation by way of the eyes allows direct access to the retinal vasculature; since 50% of the blood passes through the eyes every 40 minutes, there is a tremendous opportunity with light or electricity to directly affect the blood supply of the body.

Around 1900, ophthalmology used up to two milli-amps of electricity on the cornea to drive drugs - anti-virals, antibiotics, antifungals and steroids - in a process called iontophoresis. Erlinger later said that any salutary effect was from electrical stimulation of the sympathetic and parasympathetic nervous systems.

There are several possible mechanisms by which electricity may positively affect tissue:

- Tissue repair through genetic reprogramming.
- Changing RNA transcripts with DC may change protein synthesis.
- Affect an increase in mitochondrial output causing a change in surrounding tissue.
- Information transfer reconnected through current (0.2 v) as shown in amphibian limb regeneration.
- Low DC causes 3½ times faster wound healing.

Cells grow toward the cathode (+) away from the anode (-) and is the basis of stimulation of the macula with current through the eye.

A magnetic field associated with current causing transduction of electricity affects functional output. Electrons resonate at certain frequencies causing changes in ion centers on DNA, further causing changes in biological growth and replication.

The treatment regimen employed by the author is to apply direct current from the cornea through the eye to the back of the head, three to four times a week for ten minutes per eye. The positive pole is placed on the eye (closed eyelid) and the negative on the scalp.

The positive pole corresponds to blue light as applied in syntonics, with the following results of treatment:

- Attracts oxygen
- Vasoconstriction with some arterial dilation.
- Prevents neovascularization.
- Decreases hemorrhaging.
- Sedative effect.
- Increases tissue tonicity.
- Breaks up scar tissue - increased hydrochloric acid scavenges free electrons, breaks down hydrogenated fats and lipofusion.
- affects nutrition, decreases toxins.
- At the atomic level: changes spin and reconstitutes to a more healthy level.
- Facilitates information transfer in bioelectric fields which govern cellular function.

Results

Snellen Acuity Data

	<u>65 Eyes</u>
1-4 letter improvement	2 = 3%
1 line improvement	15=23%
2 line improvement	14=22%
3 line improvement	5 = 8%
4 line improvement	1 = 2%
No improvement	23=35%
1-4 letter decline	4 = 6%
2 line decline	1 = 2%

Eyes: 35/65 = 54% improved 1-4 lines
20/65 = 31% improved 2-4 lines

Note: of the 43 patients treated, 22 were treated in both eyes; 14 of the 22 fell into two different levels of visual performance.

Visual fields were affected as follows: Threshold (Humphrey 30-2) fields were less affected, while kinetic and color fields as used in syntonics were more profoundly changed. Most patients treated by the author had constricted kinetic fields and enlarged blind spots which improved as well. The reasons for these changes are not known as yet.

Positive changes have been documented in fluorescein angiography and scar tissue reduction.

Clinical research and testing is currently in progress at several sites, including one major hospital-medical school study which will include hundreds of patients utilizing double-blind techniques and advanced electro-physiological tests.

The author has noted increased progress when treatment includes a combination of electrical current, phototherapy (syntonics) and nutritional assistance.

It is the author's hope that this paper will stimulate further research and collaboration in the area of treatment.

References available upon request.

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In Memoriam

The College of Syntonic Optometry
Mourns the passing of

Harry Wohlfarth
1921-1996

Friend of the College
Featured Lecturer