

## Quantum Theory Treats Neuropathy Better Than Pharmacology

The principles of the quantum theory (QT) claim that electrical currents and electromagnetic energy fields administered for pain treatment electronically induce and amplify subatomic particle movements and activity to create healing within cells. This study establishes that CET – Combined Electrochemical Treatment (which is based on the principles of the quantum theory) – is a more effective, safer treatment for DPN and other peripheral neuropathies than current pharmacologic regimens.

**Study Details:** from March 1, 2010, to February 28, 2013, 98 patients with various forms of PPN received a total of 107 series of CET treatments. The participants in the study were 50% women and 50% men, all average age 66 years. On average, patients received 17.6 CET treatments. Patients rated their discomfort on a VAS score of 0-10 and their ability to function on a Peripheral Neuropathy Function Index (PNFI) score of 0-10.

**Study Results:** CET was 54% to 62% more effective than pregabalin in reducing discomfort and improving function in patients with DPN and was associated with at least 95% fewer adverse events. When further studies confirm these results, CET must become the accepted standard of care for PPN.

*Carney, P., MD, PC (2014). Quantum Theory Treats Neuropathy Better Than Pharmacology, The Pain Practitioner, 24-4: 28-31. First presented the American Academy of Pain Management 2014 Clinical Meeting.*

## Electric Current & Local Anesthetic Combination Successfully Treats Pain Associated with Diabetic Neuropathy

Combining a local anesthetic with a unique electric current resulted in a significant decrease in pain associated with Diabetic Peripheral Neuropathy (DPN). 114 patients who had DPN-related pain were offered entry into this open-label trial. 101 patients completed. The mean age of the study participant was 66.5 years. On a 10-point scale, patients that reported numbness reported an average per-treated pain score of 5.39. Post-treatment score was 0.98 - **a 81.8% reduction in symptoms. Patients without numbness saw a reduction rate of 87.2%.** These subjective findings were supported by nerve conduction velocity testing. Patients with a mild DPN experienced more improvement. Overall this study indicates that using a combination of electric current and a nerve block to treat pain and numbness associated with DPN is effective and without side effects.

*Cernak, C., DPM, FACFAS, FACPPOPPM, FASPS; Marriott, E., MD; Martini, J., MD; Fleischmann, J., DPM, AACFAS; Silvani, B., R.N.S.C.T and McDermott, M.T. (2012). Electric Current & Local Anesthetic Combination Successfully Treats Pain Associated with Diabetic Neuropathy, Practical Pain Management, April 2012. Updated on May 1, 2012. Link: <http://www.practicalpainmanagement.com/electric-current-local-anesthetic-combination-successfully-treats-pain-associated-diabetic>*

## Combination Electrochemical Therapy Improves Diabetic Neuropathy Symptoms and Functionality

Available treatment options for Diabetic Peripheral Neuropathy (DPN) offer limited efficacy and potential side effects. Treatment results with Combination Electrochemical Therapy (CET) – Electronic Signal Treatment (EST) delivered with local anesthetic injections – show marked symptom and motor function improvement.

**Study Details:** 19 males and 13 females with a mean age of 69.4 years participated in an open-label trial that combined peripheral nerve injections using 0.25% Marcaine with EST. Patients received three treatments per week over a 4-week period. Study participants initially complained of sensory pain including numbness, tingling, RLS, and burning pain that limited daily activities.



**Results:** Pre- and post-treatment Nerve Conduction Velocity exams showed measurable objective improvement, findings which the authors believe offer substantive proof of the potential for this technology. CET seeks not only to relieve patient discomfort due to painful neuropathy, but also to help restore nerve function. Some patients showed recordable improvement in the amplitude of motor nerve conduction, indicating improvement of axonal nerve function. CET is safe, with risk limited due to the local anesthetic injections, with no risk from the electronic signals.

*Cernak, C. DPM, FACFAS, FACPPOPPM, FASPS; O'Dell, Jr., R., MD; Marriott, E., MD, Silvani, B., R.NSC.T (2010). Combination Electrochemical Therapy (CET) to Treat Patients with Diabetic Neuropathy. Abstract submitted to 35th Annual Anesthesia Meetings and Workshops, April 2010.*

## Anti-Inflammatory Effects of Electronic Signal Treatment

Inflammation plays a key role in the perception of pain. Chronic inflammatory conditions are on the rise and there is controversy over whether the benefits of NSAIDs and steroids as anti-inflammatories outweigh the risks.

The principles of physics have been largely de-emphasized in modern medicine in favor of chemistry. However, electrotherapy, or Electronic Signal Treatment (EST) is a familiar application of physics that represents a powerful clinical tool which can improve overall patient care and maintenance of quality of life via low-risk and potentially curative treatments. EST should be reconsidered as an anti-inflammatory treatment that is safe, effective and long-lasting.

EST, produced by advanced electronics not possible even 10 to 15 years ago, has widely accepted anti-inflammatory effects. Numerous citations exist in molecular biology, physics, and biochemical literature supporting these ideas. The beneficial actions include the oscillo/torsional effect, pH normalization, balancing metabolic concentration differences, cAMP formation and activation (leading to the normalization of cell function), cell membrane repair and stabilization, salutary effects on metabolism, sustained depolarization of the nerve cell membrane (producing nerve block), immune system support and the obvious macro benefits of increases in blood flow and edema reduction.

*O'Dell, R. H., MD, PhD and Sorgnard, R. E., PhD (2008). Anti-Inflammatory Effects of Electronic Signal Treatment, Pain Physician Journal, November/December 2008. 11:897-907, [www.painphysicianjournal.com](http://www.painphysicianjournal.com).*



## Electroanalgesic Nerve Block – Electronic Signal Treatment Explanation & Benefits

Electroanalgesic medical treatment (also known as Electronic Signal Treatment, or EST) involves the use of computer-modulated electronic signals to imitate, exhaust or block the function of somatic or sympathetic nerve fibers. (EST devices) utilize communications-level technology to produce and deliver high-frequency signal energy in a continually varying sequential and random pattern via specialty electrodes. These electrodes (of specific size, shape and anatomical placement) can be effectively used to obtain pharmaceutical effects. The use of specific harmonic frequencies effectively increases the initiation of tissue resonance phenomenon in the microstructure and macromolecular range. Some well-known and well documented mechanisms of action employed by this harmonic resonance include the imitation of hormone/ligand effects, activation of cellular regeneration and the facilitation of enzymatic metabolic processes.

Without piercing the skin, physicians can now administer effective nerve pain treatments to reduce the hyper-irritated state of the nerves. This is accomplished by placing specific surface electrodes on the skin and introducing very specific bioelectric signal impulses to produce an electroanalgesic nerve axon blocking procedure. The strength of this targeted procedural treatment field reduces the ability of the affected nerves to transmit pain signals and, at the same time, promotes healing by means of the depolarization effects on the nerve cells. It is the authors' belief that this technology has the potential to modify how interventional pain management is practiced and to improve outcomes with little added risk.

*O'Dell, Jr., R. H., MD; Sorgnard, R., PhD; May, H. U., MD. (2006). Electroanalgesic Nerve Block, Practical Pain Management, April 2006.*