New research on carnitine for nerve function

Information taken from the article ***"Why Aging Humans Need More Carnitine"*** by Julius G. Goepp, MD published in Life Extension Magazine Sept 2006

There have been some interesting studies on the importance of carnitine with nerve function that may explain why polios do so much better on supplemental carnitine. We have known for a long time that taking carnitine helps with fatigue and muscle energy and weakness by its mitochondrial transport mechanism for long chain fatty acids in energy production for muscles. The quotes below show it may be needed to support deteriorating polio nerves too. Tessa

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"Damaged nerve cells contribute to a condition known as neuropathy, which can include symptoms such as pain, numbness, altered sensation, and muscle weakness. Neuropathy can be caused by various drugs, certain infectious agents **(including polio)**, and metabolic conditions such as diabetes.

Diabetic neuropathy plagues thousands of older adults. In addition to being painful, it can also result in tissue damage to the extremities, which may result in amputation. Since its numerous causes include decreased carnitine levels and high production of free radicals in nerve cells, scientists have investigated managing diabetic neuropathy with carnitine supplementation.

In a long-term, randomised, controlled trial in patients with diabetic neuropathy in 2002, carnitine treatment produced notable improvements in nerve conduction velocity and pain compared to placebo. Another recent study found that in addition to pain relief among 1,257 patients receiving carnitine, significant improvements were recorded in nerve fibre numbers and regenerating nerve fibre clusters in people with chronic diabetic neuropathy. These exciting results suggest that diabetic neuropathy and other forms of nerve injury may not be as irreversible as they have long been thought to be.

Additional benefits of carnitine continue to be documented as scientists find new applications for this nutrient. One recent study found that carnitine treatment helped to prevent nerve cell death, even in traumatically damaged nerve fibres. In another promising study, carnitine improved the function of the specialized nerve cells that make up the retina, the part of the eye involved in visual perception. Individuals with age-related macular degeneration, a common cause of vision loss, received a combination of carnitine, vitamin E, and other antioxidants, which led to improved function of the retinal nerve cells and slight improvements in visual function.

Because of the increased vulnerability of diabetics' hearts to injury, researchers in 2005 examined the effects of carnitine on chemical markers of heart muscle blood flow during coronary surgery. The study authors concluded that carnitine improved multiple aspects of heart function during surgery, through mechanisms affecting metabolism and blood vessel function. These findings have important implications for protecting heart health in at-risk groups, such as people who have diabetes or those who require cardiac surgery.

Carnitine is known to be neuro-protective, reducing the rate of nerve cell death in cultured cells exposed to some of the neurotoxic agents that are important in the development of Alzheimer's disease.

The observation that carnitine makes cultured nerve cells much more sensitive to the effects of nerve growth factor, thereby rescuing them from the effects of aging, led scientists to seek out other compounds with this remarkable capability. What they found was that carnitine produced rapid differentiation of early brain cells into mature neurons, while increasing the GABA content, an important neurotransmitter.

A subsequent study demonstrated that carnitine increased the availability of crucial calcium channels in nerve cells by a factor of more than four - even more than the increase produced by nerve growth factor itself. This means that carnitine not only enhances the growth of nerve cells, but also increases their ability to respond to calcium ions in performing their primary function of transmitting electrical signals. A later study showed that carnitine's effect on calcium channels was responsible for the supplement's ability to rescue nerve cells from the toxic effects of amyloid beta peptide, which is thought to play a role in Alzheimer's disease.

In 1995, researchers published the remarkable finding that carnitine stimulated the outgrowth of neurites, the minute projections from nerve cell bodies that leads to new nerve connections between cells and allows increased signalling throughout the central nervous system ie the brain and spinal cord. **(This is where polios are now getting new loss of polio-recovery nerve sprouting so carnitine may help to slow or halt that loss!)**

Aging in the central nervous system involves a loss of neurons and a reduction in the number of synapses ie joins, between the surviving cells, possibly as a result of declining levels of nerve growth factor.

The research group's insight was connecting carnitine's effects in stimulating nerve growth factor activity with carnitine's ability to increase cell survival. Their experiment demonstrated that carnitine increased neurite outgrowth and did it independently of common growth factors - meaning that it might actually be capable of replacing, and not just augmenting, nerve growth factor in the aging brain. Carnitine may thus be a key component of a therapeutic strategy to avert the neurodegenerative diseases of aging."

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These are significant findings for supporting weakening polio nerves and makes the work we have been doing with carnitine research in WA even more important in addressing the issues of the Late Effects of Polio as well as other diseases of aging affecting polios, such as diabetes, eye diseases and Alzheimer's.

Dr Niblett's has left me a letter we can send to ask your GP to do carnitine levels for you while he is away. PMH has instructed me on doing the analysis of levels. It is important to get your carnitine blood levels done before you start taking carnitine so you have a baseline

We have available better quality, more effective carnitine than you can buy in the shops thanks to Prof Finnin who was at Monash Uni in Victoria. Ring or email orders to the Polio Office and we will post out if you can't pick it up. Prices start at $62 for 50G. Tessa