Patient was initially seen in December of 2005 with a diagnosis of fibromyalgia for over 15 years. She was referred by her neurologist after unsuccessfully trying various pharmaceutical approaches. At that time, she was taking tramadol and elevil for her condition. The pain was especially severe in her upper back, arms and thighs. She was extremely fatigued throughout the day forcing her to take several short naps. Sleep studies were negative for sleep apnea. She had a positive history of irritable bowel syndrome with which she had struggled her whole life. In the past year, she was diagnosed with mild asthma.

Upon physical examination, a Ragland's Test (supine vs. standing blood pressure) revealed a 5 point drop in the systolic blood pressure with resulting dizziness. Overall, her seated blood pressure was 110/65 mm Hg. Upon palpation, thirteen Fibromyalgia points were found to be positive upon 5kg of digital pressure. Sphygmomanometry-evoked allodynia (SEA) occurred at 155 mm Hg of pressure. SpectraCell testing revealed the following intracellular functional deficiencies: vitamin B2, vitamin B12, pantethenate, vitamin E, and coenzyme Q10. The test also found that she was positive for fructose sensitivity. It was noted that all other B vitamins were in the low-normal range. Her SPECTROX antioxidant function measured extremely low at 33.1%.

Directly addressing the deficiencies revealed by SpectraCell, the patient was prescribed the following daily nutritional supplemental protocol:

1) B complex
2) 2000mcg of methylcobalamin sublingually
3) 800 IU of vitamin E with mixed tocopherols and tocotrienols
4) 200mg CoQ10

Since she displayed a pattern of adrenal insufficiency (Ragland's, low blood pressure, dizziness), she was given an adrenal support formula which contained various botanicals along with 250mg of pantothenic acid. Strict avoidance of food products with high-fructose corn syrup, fruit juices, excessive foods with table sugar, and fruit juice concentrates. A diet emphasizing antioxidant food sources was discussed.

Follow up SpectraCell testing was performed six months later.

All deficiencies resolved except CoQ10. Her SPECTROX increased from the previous report to 46.9%. Sphygmomanometry-evoked allodynia (SEA) was not found at all (stopped at 180 mm Hg). The patient states that, although she is not fully pain-free, her quality of life has improved. Her energy levels were increased and she rarely takes naps during the day. Her husband confirmed that she is complaining much less about her “aches and pains”. In addition, she feels that her irritable bowel might be less symptomatic due to the dietary changes that were recommended. It was advised that she continue her current protocol until follow up testing in six months.

NUTRITIONAL CONSIDERATIONS IN THE PAIN MANAGEMENT PRACTICE

VITAMIN D & musculoskeletal pain
Vitamin D deficiency often presents clinically as musculoskeletal pain. Correcting this deficiency can improve bone and muscle pain dramatically in patients with fibromyalgia and the painful bone disease osteomalacia.

COENZYME Q10 & migraines, myopathy
Supplementation with CoQ10 helps prevent migraine headaches, according to recent clinical trials. In addition, CoQ10 has been shown to relieve statin-induced myopathy by improving energy metabolism in muscle.

CARNITINE & myalgia, neuropathy
This important amino acid facilitates the transport of fatty acids into cell mitochondria so they can be effectively used for energy. Studies suggest that a deficiency of carnitine manifests clinically as myalgia, muscle weakness or neuropathy. In fact, supplementation with carnitine has been shown to improve pain associated with chemotherapy-induced neuropathy, diabetic neuropathy, HIV-induced neuropathy, chronic fatigue syndrome and fibromyalgia.

OLEIC ACID & chronic fatigue syndrome
A recent study showed significant correlations between the severity of chronic fatigue syndrome and levels of oleic acid, a monounsaturated fatty acid used by the body in energy storage.

MAGNESIUM & post operative pain
Magnesium alters pain processing by blocking NMDA receptors in the spinal cord. In several recent studies, administration of magnesium reduced consumption of pain killers post-operatively. The analgesic effect has been seen in cardiac, orthopedic, thoracic and gynecological surgery. Low magnesium levels also contribute to headaches and correlate strongly with the frequency of chest pain. Its antinociceptive effect is promising.

CHOLINE & acute pain
The activation of specific receptors by choline reduces acute inflammatory pain in mice, suggesting that administration of choline may help reduce the use of medication for inflammatory pain.

ALPHA LIPOIC ACID & diabetic neuropathy
Several clinical trials have documented the beneficial use of alpha-lipoic acid in the treatment of pain from diabetic polyneuropathy.

B VITAMINS & neuropathic pain
A recent study suggests clinical usefulness of vitamins B1, B6 and B12 in the treatment of neuropathic painful conditions following injury or inflammation. Vitamin B1 deficiency has been implicated in myopathy as well. Thiamin (vitamin B1) supplementation can also ease pain from shingles, migraine headaches and arthritis. Similarly, clinical indicators of pain associated with rheumatoid arthritis are inversely correlated with B6 levels. Riboflavin (vitamin B2) has also shown promise in reducing pain associated with inflammatory conditions and acts as a powerful agent in preventing migraine headaches. Since the B-complex vitamins work together, it is critical to assess the functional status of each one.

FOLIC ACID & migraines
A recent study showed that migraine headaches in children were significantly reduced when supplemented with folic acid. Magnesium supplementation has similar beneficial effects on the pain of pediatric migraine attacks.

COPPER & arthritis
Copper is necessary for the production of super oxide dismutase, which is a powerful anti-inflammatory enzyme. When administered to patients with rheumatoid arthritis, copper is effective in reducing inflammatory pain. Copper supplementation has also relieved patients of leg pain associated with sciatic neuritis.

ANTIOXIDANTS & inflammatory pain
The link between oxidative stress and inflammation has been well established. A patient in an inflammatory state will likely experience more pain. Studies have shown that reactive oxygen species are produced during persistent pain, indicating an increased need for antioxidants. Specifically, cysteine may have an inhibitory role in inflammatory pain due to its potent antioxidant effects on tissues. Similar results have been demonstrated with other antioxidants such as selenium, vitamin E, vitamin C, glutathione and coenzyme Q10. Recent studies show that intracellular inflammatory response in white blood cells play an important role in the pathophysiology of chronic fatigue syndrome. Combined antioxidant therapy also reduces pain in patients with chronic pancreatitis and fibromyalgia. Since many antioxidants work synergistically, measuring a single antioxidant may not provide an accurate picture of total antioxidant function in patients experiencing either chronic or acute pain. Spectracell’s SPECTROX™ will provide a complete picture of the patient’s overall antioxidant status.