



Chronic Fatigue Syndrome & Fibromyalgia

©2001 Huntington College of Health Sciences

Literature Education Series On Dietary Supplements

By Gene Bruno, MS, MHS – Dean of Academics, Huntington College of Health Sciences

Smart Supplementation™ is a free series of educational literature created by Huntington College of Health Sciences (HCHS) as a public service. Although copyrighted, it may be freely photocopied and distributed, but may not be altered in any way. Smart Supplementation™ is not intended as medical advice. For diagnosis and treatment of any medical condition, consult your physician.

Many doctors and researchers are convinced that Fibromyalgia and Chronic Fatigue Syndrome (CFS) are simply different manifestations of the same underlying disorder. In fact, many patients suffer from both conditions. While both have been acknowledged as real physical diseases, neither one has a known cause or cure. Is the lack of a cure all that the two illnesses have in common? Not by a long shot. When looking at what is known about Fibromyalgia and CFS, they appear to be more alike than they are different.

Chronic Fatigue Syndrome

We all get tired; most of us at times have felt depressed. But the enigma known as chronic fatigue syndrome (CFS) is not the ups and downs we experience in everyday life, or even the temporary persistence of such feelings in response to exceptional physical or emotional stress. The early hallmark of the illness is a pronounced fatigue that comes on suddenly and is relentless or relapsing, causing debilitating tiredness or easy exhaustion in someone who has no apparent reason for feeling this way. Unlike the mind fog of a serious hangover, to which CFS has been compared, the profound weakness of CFS does not go away with a few good nights of sleep but instead slyly steals a person's vigor over months and sometimes years.

People diagnosed with CFS often describe its onset as sudden but not alarming because many of the syndrome's symptoms--headache, tender lymph nodes, fatigue and weakness, muscle and joint aches, inability to concentrate--mimic those of the flu. But whereas flu symptoms usually go away in a few weeks, CFS symptoms either persist or recur frequently for more than six months. CFS is diagnosed two to four times more often in females than in males, which may be the result of biological, psychological, and social influences. The Centers for Disease Control and Prevention (CDC) have estimated the minimum prevalence rate of CFS in the United States is 4 to 10 cases per 100,000 adults 18 years of age or older (although children can have CFS, too.)

Fibromyalgia

According to the American College of Rheumatology, fibromyalgia is a common condition that is associated with widespread aching, stiffness and fatigue, and originates in muscles and soft tissues. People with fibromyalgia are found to have multiple tender points in specific muscle areas. Most individuals complain of aching and stiffness in areas around the neck, shoulders, upper back, lower back and hip areas. Many patients have no underlying disorders while others who develop fibromyalgia may have conditions such as rheumatoid arthritis, spinal arthritis or Lyme disease. Some people have symptoms of irritable bowel syndrome, tension headaches and numbness or tingling of the extremities. Depression is also not unusual in fibromyalgia patients. The cause of fibromyalgia is unknown.

Conventional medical treatment may include modest doses of over-the-counter pain relievers to help eliminate some pain and stiffness. Some

doctors may also prescribe small doses of certain antidepressant medications that help promote deep sleep. Side effects of these antidepressants can include dry eyes and mouth, constipation and increased appetite.

CFS & Fibromyalgia

A CFS diagnosis as opposed to one of fibromyalgia often depends merely on whether fatigue or pain is the most dominant symptom. Although there are certain symptoms--such as fever, sore throat, and swollen glands--that are found more commonly in CFS than in patients with fibromyalgia, the similarity in symptoms between the two conditions is undeniable. In addition, research has revealed similar physical abnormalities in CFS and fibromyalgia, such as reduced blood flow in key areas of the brain. Technologies for analyzing brain function such as SPECT and PET scans have documented these abnormalities, and there is little difference between the scans of CFS sufferers and those of fibromyalgia patients. What is still unclear is whether these abnormalities are a *result* or the *origin* of the disease.

L-Carnitine

The amino acid l-carnitine is a well-known cofactor in energy metabolism.¹ Research has demonstrated that a deficiency of both carnitine and acetylcarnitine (another form of this amino acid) existed in CFS patients who were tested.^{2 3}

When treated with l-carnitine CFS subjects experienced a statistically significant clinical improvement in 12 of the 18 studied parameters after 8 weeks of treatment. None of the clinical parameters showed any deterioration. The greatest improvement took place between 4 and 8 weeks of l-carnitine treatment. Researchers in this study concluded that "L-Carnitine is a safe and very well tolerated medicine which improves the clinical status of CFS patients."⁴

NADH

NADH is a coenzyme found naturally in all living cells. It plays a key role in the energy production of cells, particularly in the brain and central nervous system. Given its role in energy metabolism, researchers decided to conduct a randomized, double-blind, placebo-controlled crossover study on CFS patients using NADH. Subjects were randomly assigned to receive either 10 mg of NADH or placebo for a 4-week period. Following a 4-week washout period, subjects were crossed to the alternate regimen for

a final 4-week period. The results were that 31% of the patients responded favorably to NADH, in contrast to 8% in the placebo group. No severe adverse effects were observed related to NADH.⁵

St. John's Wort

Serotonin is a neurotransmitter with several functions, including the mediation of sleep cycles and mood. Research has shown that the release of serotonin is defective in CFS patients tested.⁶ In addition, antidepressant drugs that increase serotonin levels (i.e., SSRIs) have been shown to be effective in treating CFS.^{7 8}

Although the use of St. John's Wort for treating CFS has not yet been the subject published research, it may very well be worthwhile investigating on a personal level by CFS sufferers. The reason for this is that St. John's Wort has also been shown to have clinical activity as an SSRI (i.e., selective serotonin reuptake inhibitor) increasing serotonin and decreasing mild to moderate depression.^{9 10}

Vitamin B12

A study on 12 women who had both fibromyalgia and chronic fatigue syndrome were found to have increased homocysteine levels in the cerebrospinal fluid. This study found a significant positive correlation between the increased homocysteine levels and fatiguability, and that the levels of vitamin B12 in cerebrospinal fluid also correlated significantly with fatiguability. Since Vitamin B12 deficiency is associated with increased homocysteine levels, the researchers observed that the low level of vitamin B12 found in their patients probably contributed to the increased homocysteine levels.¹¹ Consequently, supplementation of vitamin B12, which can reduce elevated homocysteine levels, may help reduce homocysteine and fatigue in patients with fibromyalgia and chronic fatigue syndrome.

Malic acid (magnesium malate)

In recent years, evidence has accumulated to suggest that FM may be, at least in part, the result of local hypoxia (oxygen deficiency) in the muscles. For instance, patients with FM have low muscle-tissue oxygen, pressure in affected muscles and to a lesser degree the same was found in other tissues. Muscle biopsies from affected areas showed muscle tissue breakdown and mitochondrial damage. Additionally, low levels of the high energy molecules ATP, ADP,

and phosphocreatine were found. It has been hypothesized that in hypoxic muscle tissues part of energy metabolism is inhibited, reducing ATP synthesis. This stimulates a process which results in the breakdown of muscle proteins to amino acids that can be utilized to make ATP. This muscle tissue breakdown, which has been observed in muscle biopsies taken from FM patients, is hypothesized to result in the muscle pain characteristic of FM.^{12 13}

Malic acid is a natural substance both derived from food sources and synthesized in the the body though the citric acid cycle. Since it plays a central role in energy production, especially during hypoxic conditions, malic acid supplements have been examined for their effects on FM. Subjective improvement in pain was observed within 48 hours of supplementation with 1200 - 2400 milligrams of malic acid, and this improvement was lost following the discontinuation of malic acid for 48 hours. While these studies also used magnesium supplements, due to the fact that magnesium is often low in FM patients, the rapid improvement following malic acid, as well as the rapid deterioration after Half of the subject began taking Rhus tox 6C, while the other half took a placebo. Halfway through the trial the treatment was switched: the group who were unknowingly taking the placebo began taking the active treatment, and the group who were unknowingly taking the active treatment began taking the placebo. The study showed that patients did better in all variables being tested (the number of tender spots, 10 cm visual analogue scales of pain and sleep, and overall assessment) when they took the active treatment rather than placebo. The number of tender spots was reduced by about a quarter. There were 53 patients with improved pain or sleep while taking active treatment and only 27 while taking placebo.¹⁷

By contrast, a trial in the Australia involving just three patients who used Rhus tox found that there was no benefit when a 6X dilution was used.¹⁸ Please note, the British study used a 6C dilution, while the Australian study used a 6X solution. On the surface, the difference between 6X and 6C may seem unimportant, but the dilution difference is enormous. With one study using Rhus tox 6C and claiming marked benefits for Fibromyalgia patients and one using Rhus tox 6X showing no benefit, the jury is still out. However since there is absolutely no chance of

discontinuation, suggests that malic acid is the most important component. This interesting theory of localized hypoxia in FM, and the ability of malic acid to overcome the block in energy production that this causes, should provide hope for those afflicted with FM.¹⁴

SAMe

S-adenosyl-L-methionine (SAMe) is a natural molecule synthesized from the amino acid methionine in the presence of magnesium and adenosine triphosphate (ATP). A study of 17 fibromyalgia patients revealed a significant improvement in both pain at trigger points and depression following SAMe treatment.¹⁵ In another study, 34 fibromyalgia patients receiving SAMe experienced improvement in pain and overall well being, although these improvements were not considered “statistically significant.”¹⁶

Rhus Tox

The *British Medical Journal* published a double-blind, placebo-controlled, cross-over study on the treatment of fibromyalgia using the homeopathic remedy, Rhus toxicodendron, or Rhus tox.

side effects with homeopathy there is little to be lost in trying—but try the 6C first.

Diet and/or other considerations

First of all, you should follow a healthy diet so as not to exacerbate any immune dysfunction which may be involved in the condition. Next, develop a plan to avoid or limit overexertion and emotional stress. Allow yourself time each day to relax. That may mean learning how to say “no” without guilt. But don’t change your routine totally. People who quit work or drop all activity tend to do worse than do those who remain active. Some people get relief from massages, hot baths and relaxation techniques. In addition, try to exercise regularly. For those with fibromyalgia, exercise may increase your pain at first. But doing it regularly often improves symptoms. Appropriate exercises include walking, swimming, biking and water aerobics. Aim for at least 20 to 30 minutes of exercise four or more times a week. Stretching and good posture are also helpful. Keep your activity on an even level. If you do too much on your “good” days, you may have more “bad” days. Finally, get enough sleep—lack of sleep makes fatigue and other symptoms worse. Try to develop regular sleep hours and get adequate rest each night.

References

1. Saheki T, et al, *Nippon Rinsho* (1999) 57(10):2270-5.
2. Kuratsune H, et al, *Int J Mol Med* (1998) 2(1):51-6.
3. Plioplys AV, Plioplys S, *Neuropsychobiology* (1995) 32(3):132-8.
4. Plioplys AV, Plioplys S, *Neuropsychobiology* (1997) 35(1):16-23.
5. Forsyth LM, et al, *Ann Allergy Asthma Immunol* (1999) 82(2):185-91.
6. Dinan TG, et al, *Psychoneuroendocrinology* (1997) 22(4):261-7.
7. O'Malley PG, et al, *J Fam Pract* (1999) 48(12):980-90.
8. Redmond G, *Int J Fertil Womens Med* (1997) 42(2):67-72.
9. Singer A, Wonnemann M, Muller WE, *J Pharmacol Exp Ther* (1999) 290(3):1363-8.
10. Laakmann G, et al, *Pharmacopsychiatry* (1998) 31 Suppl 1:54-9.
11. Regland B, et al, *Scand J Rheumatol* (1997) 26(4):301-7.
12. Eisinger J, Plantamura A, Ayavou T, *J Am Coll Nutr* (1994) 13(2):144-8.
13. Anonymous, *Nutr Rev* (1994) 52(7):248-50.
14. Abraham, G. and J. Flechas, *J of Nutr Medicine* (1992) 3, p 49-59.
15. Tavoni, A., et al, *Am J Med* (1987) 83(5A):107-10.
16. Volkmann, H., et al, *Scand J Rheumatol* (1997) 26(3):206-11.
17. Fisher P, et al, *British Medical Journal* (1989) 299:365-366.
18. Gemmell H, et al, *Chiropractic Journal of Australia* (1991) 21(1):2-6.



For more than two decades, Huntington College of Health Sciences (HCHS) has offered more than a conventional undergraduate or graduate education. Our accredited*, distance learning degrees and diploma programs also include the breadth of responsible complementary and alternative medicine viewpoints, providing our students with a well-rounded and comprehensive approach to nutrition and the health sciences:

- Master of Science in Nutrition
- Bachelor of Health Science in Nutrition
- Associate of Science in Applied Nutrition
- Diploma in Comprehensive Nutrition
- Diploma in Dietary Supplement Science
- Diploma in Sports Nutrition
- Diploma in Women's Nutrition
- Diploma in Natural Sciences
- Diploma in Small Business Management

1204D Kenesaw
Knoxville, TN 37919
865-524-8079 • 800-290-4226
E-Mail: studentservices@hchs.edu
www.hchs.edu

*Accredited member Distance Education & Training Council.