



## Membrane Lipid Replacement for reduction of pain, fatigue, gastrointestinal and other symptoms in patients with peripheral pain: Case reports

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### Abstract

A preliminary case study was initiated to determine if oral wafers containing a combination of membrane glycerolphospholipids (4-6 g per day) could reduce self-reported peripheral and widespread pain, fatigue, and gastrointestinal symptoms in patients. The first patient was a 51-year-old male veteran who complained of joint and muscle pain, disabling chronic fatigue, nausea, gastrointestinal symptoms (stomach pain, diarrhea, bloating), intermittent fever, sleep problems, headaches and short-term memory impairments. He had undergone various treatments for post-traumatic stress disorder without resolution of his condition. He was placed on 4.8 g per day oral glycerolphospholipids, and within one week reported improvements in pain, fatigue and gastrointestinal symptoms. These gains have been maintained as long as he continues taking the oral glycerolphospholipids. The second patient was a 53-year-old female veteran with sharp stabbing pain and electrical shocks, tingling and numbness in her legs and feet with headaches, fatigue and sleep problems. After 5 months on 2 g per day oral glycerolphospholipids with slow resolution of her symptoms, she switched to 6 g per day oral glycerolphospholipids with dramatic improvements in peripheral pain, tingling and numbness. Her pain, headaches, fatigue and sleep problems have largely resolved as long as she continues on the oral glycerolphospholipids at a dose of 6 g per day. The third patient was a 68-year-old victim of a point-blank shotgun wound to the abdomen who sustained extensive damage to her large and small bowel that required partial resection in 1978. She suffered for decades from severe, chronic pain, fatigue, diarrhea and gastrointestinal symptoms that were unresolved with various treatments. Before presentation she discontinued narcotic pain control, and after examination she received myofascial trigger point therapy with spinal manipulation. She was placed on approximately 5 g per day oral glycerolphospholipids. Within 3 weeks she regained control over her bowel movements and her pain and fatigue levels had improved substantially. Patients that have continued taking the oral glycerolphospholipids have not regressed in the severity of their pain, fatigue and gastrointestinal symptoms.

### Introduction

Membrane Lipid Replacement (MLR) is the natural replacement of membrane glycerolphospholipids using oral supplements, and it has been used in various clinical disorders and in aged individuals to improve health [1,2]. Specifically, MLR results in the replacement of damaged cellular membrane lipids with undamaged, unoxidized lipids to ensure proper function of cellular and organelle membranes. Combined with antioxidants, MLR supplements have proven to be effective in reducing disease-associated changes in cellular activities and functions and in reducing symptom severity and providing host support [1-3]. For example, the MLR supplement NTFactor Lipids<sup>®</sup> has been used to significantly reduce fatigue in patients with chronic illnesses and in aged individuals with chronic fatigue and other symptoms [4,5].

Fibromyalgia is a condition characterized by chronic, widespread pain, abnormal processing of pain and increased sensitivity to external stimuli, fatigue, gastrointestinal symptoms and

changes in memory, mood and sleep [6-8]. The American College of Rheumatology has established diagnostic criteria for the diagnosis of fibromyalgia based on a pain index and symptom severity scale [7]. Using the symptom severity scale patients score their severity as 0 (no symptoms), 1 (slight or mild symptoms), 2 (moderate or considerable symptoms, often present at a moderate levels), or 3 (severe, continuous symptoms). Using this criteria it has been estimated that between 0.1-3.3% of western countries and 2.0% of the United States populations have fibromyalgia. Interestingly, higher incidence rates have been found in females compared to males [9].

Oral supplements have been used to reduce symptoms in patients with fibromyalgia, chronic fatigue and other chronic illnesses [2,3,10]; however, few if any of these natural supplements were considered effective in reducing symptom severity [11]. Some symptoms, like fatigue and pain, also occur during normal aging, and they are important as secondary symptoms in many chronic diseases [12].

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In fibromyalgia patients low-dose oral caffeine (equivalent to one or less cup of coffee or about 40-50 mg) up to moderate doses (equivalent to 1.5-2.5 cups of coffee) of caffeine have been used to reduce pain and fatigue [13]. In this study caffeine consumption had a modest but significant effect on chronic pain reduction, but among non-opioid users this effect was not significant [13]. Caffeine is a widely consumed natural food supplement; it is present in numerous foods and beverages and is generally considered safe for adults at doses up to 400 mg per day [14,15]. In a small open label study we previously found that a combination of low dose controlled-release caffeine (184 mg per day) and NTFactor Lipids® (4.8 g per day) resulted in significant reductions in pain, fatigue and other symptoms in fibromyalgia patients within one week [16]. Here we found that the reductions in fibromyalgia pain and fatigue as well as gastrointestinal symptoms could be achieved with NT Factor Lipids® alone without caffeine.

## Case Presentations

### Case Report A.

The patient is a 51-year-old male veteran of the first Gulf War (1991). His symptoms of joint and muscle pain, disabling chronic fatigue, nausea, gastrointestinal symptoms (stomach pain, diarrhea, bloating), intermittent fevers, sleep problems, headaches and short-term memory impairments were similar to those of other veterans that we had studied [17]. These symptoms had persisted intermittently since 1992 without resolution, even though he had received a diagnosis and various treatments for post-traumatic stress disorder [18]. Previous dx were chronic fatigue syndrome (CFS) and fibromyalgia in 2005. He had minor surgery in 2015 for skin lesions that were determined to be benign lipomas. No further treatments or procedures were conducted, as the patient refused follow-up consultations. Upon presentation in 2017 the patient complained of extreme fatigue, widespread musculoskeletal pain, gastrointestinal symptoms, including intermittent stomach pain, abdominal cramps, and bloating, intermittent headaches, sleep difficulties and an inability to concentrate and retain information consistent with his dx of CFS and fibromyalgia symptoms score of 3 on the pain severity scale. He had stopped all pharmaceutical pain and psychotropic medications, but continued to take vitamin and mineral supplements, coenzyme Q10 (CoQ10), plant antioxidants, and maintained a largely vegetarian diet. Within one week of taking 4.8 g of NTFactor Lipids® wafers, the patient reported significant improvements in pain, fatigue, gastrointestinal problems, headaches and sleep difficulties (score between 2 and 1). Also there were apparent patient-perceived improvements in cognition and short-term memory loss. These improvements have been sustained, and the patient continues to take the oral glycerolphospholipids.

### Case Report B.

The patient is a 53-year-old female veteran with a congenital bicuspid aortic valve with moderate aortic regurgitation, as revealed by echocardiogram. An unrelated cardiac electrical issue had been previously resolved with successful cardiac ablation for paroxysmal supra-ventricular tachycardia for A-V re-entry nodal arrhythmia. She refused beta-blockers, and her condition resolved within 6 months. In 2013 she began having sharp stabbing pain and numbness in her feet with tingling and electrical shocks that progressed up to the thigh area with bilateral muscle weakness in her lower extremities. Cortisone injections failed to give any relief, and neuromas were ruled out with MRI. Sleeping became an issue because of foot pain and tingling sensations. She has maintained supplementation of her largely vegetarian diet with CoQ10, vitamins C, E and B-complex, fish oil, L-Carnitine, curcumin, lipoic acid, liposomal glutathione and astaxanthin-lutein eye formula. In 2016 she was referred to a neurologist who performed a nerve conduction study and electromyogram and suggested a spinal MRI, which was refused. Her dx was idiopathic peripheral neuropathy. This same year she also began having headaches starting at about 4 AM, but refused pharmacological remedies. In 2018 she was dx with posterior vitreous detachment, which subsided after 6 months. In

April 2018 at a symptom severity score of 3 she started oral NTFactor Lipids® (approximately 2 g per day) wafers and continued the other nutraceuticals as before. Within 3-4 weeks her leg electrical surges/shocks and numbness and tingling had slowly diminished along with her peripheral pain, starting with the thigh area and extending with time down each leg. After continuing on the same dose of NTFactor Lipids® for 5 months, she realized that the recommended daily dose of NTFactor Lipids® for her condition was about twice the dose she had been taking. She also noticed that if she did not consistently take the NTFactor Lipids®, her symptoms would slowly return. After 5 months she increased the dose of NTFactor Lipids® to 6 g per day, and her condition continued to slowly improve (severity of 3 reduced to 1-2). As of 2019 she still had some numbness and very faint tingling in both feet, her chronic headaches are not as severe or frequent, and her sleep difficulties have largely resolved. She has now also added 3-5 mg of liquid melatonin sublingually as well as 20 mg of progesterone cream. Follow-up indicates that these improvements have been sustained, as long as she continues to take the NT Factor Lipids® at a dose of 6 g per day.

### Case Report C.

The patient was a 68-year-old female who in 1978 had been shot point-blank in the abdomen and lower back with a 12-gauge shotgun. At that time she sustained extensive damage to her large and small intestines that required partial large and small bowel resection. For decades she suffered from unrelenting severe, chronic pain, fatigue, diarrhea and gastrointestinal symptoms (score 3) that were unresolved with various treatments. She had been on narcotics and under the care of a pain management specialist when she presented in 2015. Her specialist would only treat her pain with narcotics, and her fatigue and gastrointestinal symptoms were largely ignored. At the urging of her children, she discontinued narcotic pain treatment before presentation. At the time of her examination she had severe pain (neck, mid-back, central-back and lower-back and left shoulder with limited range of motion), fatigue and gastrointestinal distress with long-standing intractable diarrhea (severity of 3). She received myofascial trigger point therapy with spinal manipulation and was placed on MLR with vitamins and minerals (Propax™ with NTFactor Lipids® and NTFactor Lipids® wafers for a total of approximately 5 g per day NTFactor Lipids®). After three days she reported her first solid bowel movement since her ghotgun incident, and within 3 weeks she regained control over her bowel movements. Within three weeks her pain levels and fatigue levels improved substantially (to 1-2 moderate), and her gastrointestinal symptoms had improved. She had more energy and stamina, and her fatigue had almost resolved. Unfortunately she did not continue on the MLR, and her symptom severity slowly worsened.

## Discussion and Conclusion

Oral supplements containing membrane glycerolphospholipids have been used successfully in several clinical studies to reduce symptom severity (reviewed in [1-3, 5]). Here we used the MLR supplement NTFactor Lipids® with fructooligosaccharides and antioxidants to protect the phospholipids from disruption, degradation and oxidation in the gut [1,2]. These membrane glycerolphospholipids are absorbed and transported into tissues and cells without excessive oxidative damage [2]. Once inside cells, the undamaged, replacement membrane phospholipids can exchange with damaged membrane phospholipids, resulting in eventual removal of the damaged molecules. MLR glycerolphospholipids also provide important precursors for specific membrane phospholipids, such as inner mitochondrial membrane cardiolipin. An important addition to NTFactor Lipids® was the incorporation of fructooligosaccharides and antioxidants to prevent oxidation and other forms of damage to the phospholipids [1,2]. This is also essential for maintaining potency during product storage and during ingestion and digestion. In the small intestines glycerolphospholipids are dispersed into small lipid globules and micelles that are absorbed by the gut epithelium and transferred to the lymph and blood circulations for transport to various tissues and cells [2].

Clinical studies using oral MLR supplements for the most part have been designed to show reductions in fatigue and protection of cellular and mitochondrial membranes from oxidative damage [1-5]. In some studies NTFactor Lipids® have been used in a vitamin and mineral mixture (Propax™) in cancer patients to reduce the adverse effects of cancer therapy, such as chemotherapy-induced fatigue, nausea, vomiting and other side effects [19]. Here patients showed significant reductions in fatigue similar to results found in previous studies with fibromyalgia and CFS patients [4,5,16]. Moreover, they also showed reductions in pain and gastrointestinal symptoms similar to a previous study using MLR plus a time-release caffeine [16]. That the results of the previous study could have been due exclusively to the presence of the time-release caffeine was shown not to be the case, as the NTFactor Lipids® alone were sufficient for symptoms reductions.

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