Clinical guide

Nutritional interventions for managing CFS/ME

Overview

CFS/ME, characterised primarily by prolonged periods of fatigue, is also associated with cognitive symptoms such as poor concentration and decreased memory, as well as numerous somatic symptoms including painful joints and muscles, disordered sleep patterns and gastrointestinal issues. CFS/ME is associated with persistent viral infection that impairs the body's ability to make omega-3 and omega-6 long-chain polyunsaturated fatty acids. The reduced efficiency of this key process results in disruption of eicosanoid production, affecting regulation of inflammatory and immune processes and exacerbating symptoms. In addition, the increased choline levels found within key areas of the brain in CFS/ME sufferers further supports the potential for abnormal phospholipid metabolism associated with the condition. Mitochondrial dysfunction and depletion of coenzyme Q10, as observed in CFS/ME patients, reduces the energy supply to muscles, adding yet further load to symptom severity. Increased oxidative stress and blockage of the methylation cycle leads to elevated homocysteine levels and depletion of the antioxidant *glutathione*. Depletion of both coenzyme Q10 and glutathione further increases oxidative stress and results in immune response alterations, which exacerbate viral load. Nutritional intervention for CFS/ME should include fatty acid supplementation to overcome eicosanoid disruption and ubiquinol – the reduced form of coenzyme Q10 – to support ATP production and combat oxidative stress, whilst homocysteine levels can be effectively managed and controlled with supplementary vitamins B6, B12 and folic acid, to support the methylation cycle and increase glutathione levels.

Treatment protocol for CFS/ME †

It is clear from fatty acid intervention studies that, when individuals are recruited irrespective of their omega-3 baseline levels and then treated with fixed doses (ignoring the large inter-individual variability in omega-3 uptake), the treatment outcomes derived from omega-3 supplementation can vary considerably. *Key* to successful intervention is the understanding that we are metabolically unique individuals with highly personal nutrition requirements. As such, at Igennus we focus on omega-3 interventions to optimise therapeutic outcomes at an individual level rather than endorsing a '*one size fits all*' dosing regimen. When baseline omega-3 levels and body weight are taken into account together with client biomarker results from the Opti-O-3 test, it is possible to personalise dosing to bring clients' omega-3 levels into the desired ranges quickly and efficiently.

Dosing chart

The Opti-O-3 biomarker test is highly effective when used in conjunction with our therapeutic range of supplements. By identifying the actual dose required to achieve an omega-3 index of ≥8% and an AA to EPA ratio of 1.5-3:1, it offers the ideal solution to personalised nutrition. When it is not possible to use the Opti-O-3 biomarker test, we suggest the following minimum doses.

Dosing chart

Product	Dose	Duration
Pharmepa RESTORE	4 x 1 capsule daily (2 g)	6-12 months (symptom dependent)
Homocysteine Control	3 x 1 tablet daily	6 months
VESIsorb™ Ubiquinol	1 - 2 capsules daily	6 months
Pharmepa MAINTAIN	3 x 1 capsule daily (1 g)	from 6-12 months onwards
Homocysteine Control	3 x 1 tablet daily	from 6 months onwards
VESIsorb™ Ubiquinol	1 x capsule daily	from 6 months onwards

† As an evidence-led company, we endeavour to update our treatment protocols according to scientific updates and our new Pharmepa RESTORE & MAINTAIN protocol replaces our previous recommendations for Vegepa.

Contraindications

EPA thins the blood and can decrease blood pressure. Whilst it is perfectly safe to take alongside anticoagulant or antihypertensive medication, we recommend that the patient inform their doctor.
Side effects: taking capsules with meals can help decrease the likelihood of fishy aftertaste, belching, nausea, and loose stools occasionally experienced when taking high dose omega-3.
Warnings: pregnant or lactating women should consult their doctor before taking any food supplement.

Notes

- Capsules and tablets should be taken as a split-dose and **with food** for optimum absorption and to improve bioavailability
- At 6-12 months, if the client is happy with level of improvement, the doses may be reduced where relevant
- After reducing dose, should symptoms show signs of recurrence, the client should be advised to increase dosage until improvement is observed
- Clients should be encouraged to continue with long-term low maintenance dose to avoid remission
- Novel *VESIsorb* delivery system allows 1-a-day dosing for ubiquinol

Mechanisms of action of CFS/ME management protocol

- Supplementing pre-formed long-chain omega-6 and omega-3 bypasses delta-6 desaturase
    - *Restores* long-chain fatty acid levels
    - *Maintains* cell membrane integrity
    - Delivers virucidal, antibacterial and antifungal activities
- Restores a healthy AA to EPA ratio to regulate inflammation
    - Reduces *pro*-inflammatory cytokines
    - Increases *anti*-inflammatory products
- Regulates neurotransmitter function (serotonin, dopamine, melatonin)
- Improves cell signalling and transduction & receptor density regulation
- Improves cognitive function and sleep patterns
- Lowers homocysteine levels and supports methylation processes
- Increases antioxidant (glutathione and ubiquinol) levels
- Improves energy levels via ATP production
- Supports optimal Th1/Th2 immune response
- Free radical-scavenging properties of ubiquinol and glutathione reduce oxidative stress. By reducing oxidative stress, methylation processes are improved, further supporting glutathione and ubiquinol production

The science

- Activation of inflammatory and cell-mediated immune pathways, lowered antioxidant status and increased levels of pro-inflammatory cytokines are known to induce fatigue and somatic symptoms in CFS/ME.

- By inhibiting the enzyme delta-6 desaturase, the persistent viral infection associated with CFS/ME disrupts the synthesis of key long-chain polyunsaturated fatty acids essential to proper functioning of cell membranes, and affects the biosynthesis of eicosanoids involved in the regulation of immune and inflammatory pathways.

- Increased choline within the basal ganglia, and the front and optical cortex, are indicative of abnormal phospholipid metabolism.

- A high arachidonic acid (AA) to EPA ratio, a marker of inflammation, significantly correlates with symptoms and fatigue severity in CFS/ME patients.

- By-products from EPA and GLA inhibit viral replication and act as antiviral compounds.

- Cold-pressed organic evening primrose oil, the source of GLA in Pharmepa, contains phytosterols, which exhibit antibacterial & antifungal activities and anti-inflammatory effects; it also contains triterpenes, which possess free radical-scavenging and cyclooxygenase inhibitory properties, thus beneficially reducing the conversion of AA to pro-inflammatory mediators.

- The methylation cycle plays an essential role in a large number of biochemical reactions, including the production of glutathione. Increased oxidative stress in CFS/ME can cause a partial block of the methylation cycle through inhibition of methionine synthase (MS), with a subsequent negative impact on glutathione production.

- A significant positive correlation between homocysteine levels and levels of fatigue has been reported in CFS/ME. Elevated homocysteine and low B-vitamin status found in CFS/ME are primary indicators of poor methylation.

- As glutathione levels drop and oxidative stress increases, a shift in the nature of the immune response from Th1 to Th2 leaves the patient effectively immune compromised.

- Glutathione production directly affects the synthesis of biological molecules involved in energy production, such as carnitine and coenzyme Q10, both known to be compromised in CFS/ME. Deficiency can result in muscle weakness and pain, exercise intolerance and debilitating fatigue.

- Mitochondrial dysfunction and coenzyme Q10 deficiency are key players in CFS/ME symptoms. Ubiquinol plays an essential role in mitochondrial electron transport and, as such, in energy production. In addition, ubiquinol is a potent antioxidant and antioxidant *recycler*, playing a vital role as a scavenger of free radicals, reducing oxidative stress and inflammation.