

# Nutritional Influences on Illness

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## Essential Fatty Acids in Multiple Sclerosis

Multiple sclerosis appears to share with many other neurological diseases a lipid imbalance arising from faulty lipid metabolism and involving the essential fatty acids.<sup>1</sup> More specifically, reductions in levels of docosahexaenoic acid (DHA),<sup>2</sup> eicosapentaenoic acid (EPA),<sup>3</sup> linoleic acid,<sup>4,5</sup> and arachidonic acid<sup>2,5</sup> have been noted in nervous tissue, blood plasma and/or erythrocytes of MS patients. Since absorption of the essential fatty acids (EFA) appears to be normal,<sup>6</sup> there has been a good deal of interest in ascertaining whether EFA supplementation may affect the clinical course of the disorder. We will review some of the evidence suggesting that it may have a beneficial effect.

### Omega-3 Fatty Acid Supplementation

When 12 patients with clinically defined MS received an average of 4.2 grams EPA and 2.8 grams DHA in the form of MaxEPA, a proprietary fish oil preparation, for just 1 to 4 months, all 5 patients with acute relapsing MS showed a slight but significant reduction in total neurologic scores, while the 7 patients with slowly progressive MS continued to deteriorate.<sup>7</sup>

This study was followed by a randomized double-blind study of 312 patients with acute relapsing MS. Both groups received dietary advice to increase their intake of omega-6 fatty acids, while just the treatment group was supplemented with omega-3 fatty acids. Although, after 2 years, there were no significant differences between the two groups in regard to the duration, frequency and severity of relapses, and the number of patients who had improved or remained unchanged, there was a trend in favor of the treatment group in all of these parameters.<sup>8</sup>

More recently, a study has measured the impact of 6 months of dietary supplementation with omega-3 fatty acids on immune function in a group of 20 relapsing-relapsing patients compared to 15 age-matched controls. In both groups, supplementation both reduced the production of proinflammatory eicosanoids and decreased the production of some cytokines with an immunoenhancing effect, changes that could modulate certain immune functions which have been demonstrated to be altered in MS patients.<sup>9</sup>

### Omega-6 Fatty Acid Supplementation

The results of epidemiologic studies of the relationship between the prevalence of multiple sclerosis and diet are consistent with the hypothesis that linoleic acid intake is inversely related to the risk of developing the disorder.<sup>10,11</sup>

Three double-blind trials of patients with a relapsing-relapsing course who received supplementation with this nutrient were reanalyzed together due to inconsistency in the findings. The combined data consisted of neurologic assessments over two and one-half years of trials for 87 treated patients and 85 control patients.

Treated patients with minimal or no disability at entry had a significantly smaller increase in disability than did controls. In

addition, treatment reduced the severity and duration of relapses at all levels of disability and duration of illness at the time of entry to the trials.

The authors suggest that the study design may have failed to reveal the full extent of potential benefits as oleic acid, the placebo used, may itself ameliorate MS-like illnesses.<sup>12</sup> Moreover, Horrobin believes that the results were suboptimal due to inadequate dosages and the use of dyes in the supplements which block the conversion of essential fatty acids to prostaglandins.<sup>13</sup>

In a subsequent study, the blood of 16 patients was found to be less filterable than normal. They were supplemented with evening primrose oil 4 grams daily and, after only 3 weeks, both blood filterability and hand grip strength were improved, suggesting that there was improved capillary perfusion in their muscles.<sup>14</sup>

These are some of the many studies that have investigated the relationship of essential fatty acids to the development and treatment of multiple sclerosis. While the clinical trials have had different lengths, electrophoretic mobility studies of red cells from MS patients indicate that treatment with unsaturated fatty acids requires at least 2 years before normal reactivity is restored. Assuming this also applies to myelin, clinical trials need to last at least this long before reaching conclusions about their efficacy.<sup>15</sup>

*Doctor Werbach cautions that the nutritional treatment of illness should be supervised by physicians or practitioners whose training prepares them to recognize serious illness and to integrate nutritional interventions safely into the treatment plan.*

### References

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