

# Essential Fatty Acids

from Biotics Research Corporation

As a chief component of cellular membranes, essential fatty acids (EFAs) play a critical role in both membrane structure and function.

These functional aspects include:

- Regulation of intrinsic membrane enzymes and proteins, both of which play a significant role in the structural integrity of the membrane
- As required precursors to the eicosanoids, including various end products such as prostaglandins, leukotrienes, and thromboxanes, all of which have a profound influence on cellular reactions
- As regulators in the cell membrane transport processes
- As critical components in the modulation of gene expression

**There are a core group of EFAs that, when supplied in the proper ratio, benefit many aspects of health.**

**EPA/DHA** - Eicosapentaenoic acid (EPA) and decosahexaenoic acid (DHA) are the most active and beneficial derivatives of marine derived omega-3 fatty acids. Both the brain and nervous system are higher in DHA, as compared to the rest of the body. EPA derived eicosanoids have established effectiveness in blocking the production of series-2 prostaglandins (PGE2, PGF2- $\alpha$ ), which when elevated aids the anti-inflammatory response. An increase in omega-3 fatty acids has demonstrated a diminishing effect on the level of proinflammatory markers, including IL-6, high density lipoprotein, TNF- $\alpha$  and C-reactive protein, along with a corresponding elevation in anti-inflammatory markers, including soluble IL-6 receptor and IL-10.

**ALA** - considered the "first in line" in the omega-3 fatty acid family. The primary dietary source of ALA is flax seed oil, consisting of 57% ALA. Intake of ALA has demonstrated to significantly decrease markers of inflammation.

**GLA** - considered the most powerful health-promoting omega-6 fatty acid that works to reduce the inflammatory effects of arachidonic acid. A variety of oils are high in GLA, however borage oil is considered the richest source.

**Oleic Acid** - has both anti-inflammatory and health promoting benefits. Its use has been associated with alleviating both oxidative stress and inflammatory mediators, while promoting antioxidant defenses.

Intake of EFAs has been correlated to the interaction of neuroendocrine factors associated with brain-intestinal loop signals of energy metabolism, including insulin, ghrelin and leptin. In one study with overweight and obese volunteers, the intake of long chain  $\omega$ -3 fatty acids was correlated to a modulation of postprandial satiety during weight loss. A high intake of  $\omega$ -3 fatty acids was noted to lower hunger sensation in this study group. Since appetite control is considered a vital component to the accomplishment of any weight management program, the incorporation of  $\omega$ -3 fatty acids may represent an important factor in goal achievement. Obesity and a lower plasma concentration of  $\omega$ -3 fatty acids have been significantly correlated. Additionally, markers of obesity including BMI, waist circumference and hip circumference have been shown to be inversely correlated with EPA and DHA concentration ( $P < 0.05$  for all). EFA intake also aids in promoting the feeling of satiety.

Symptoms of fatty acid deficiency are numerous. The interchangeability of the various fatty acids dictates the prerequisite of individually assessed requirements. A custom, tailored recommendation of the appropriate essential fatty acid or combination formula allows for greater health benefits and superior clinical results.

**Flax Seed Oil** – Pure, certified organic, cold pressed flax seed oil, providing ALA, Linoleic and Oleic Acids

**Biomega-3™** – Natural marine lipid concentrate™, providing EPA and DHA

**Optimal EFAs®** – Blend of fish, flax and borage oil, providing EPA, DHA, ALA and Oleic acids. Available in a liquid or capsules to best meet your patients' dosing needs

**Mixed EFAs™** – Liquid source of ALA, Linoleic Acid and Oleic Acids



**Biotics supplies  
several product  
options for you to  
tailor your patients'  
nutrition regiment  
according to need.**

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