

NORDIC NEWS

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RESEARCH SPOTLIGHT

Concentrated Essential Fatty Acids (EFAs) and Inflammation

In the past, studies revealed that supplementation of human diets with gamma-linolenic acid (GLA) reduced the generation of lipid mediators and clinical symptoms of chronic inflammatory disorders. However, it has also been shown that supplementation with GLA alone may cause a marked increase in serum arachidonic levels (AA), as a potentially harmful side effect.

Arachidonic acid (AA), present in immune cell phospholipids, is the precursor of eicosanoids (PGE2) that promote neutrophil accumulation which leads to tissue injury and inflammation.

In order to increase levels of beneficial PGE1 in the body, GLA is elongated to DGLA, which is the direct precursor of PGE1. However, in some cells, there is the precursor for DGLA to be further metabolized, via delta-5 desaturase, to AA leading to more PGE2 and thus more inflammation.

It is now understood that when EPA and GLA are given together, the human body is able to maximize the production of anti-inflammatory PGE1 and PGE 3, while maximizing the reduction in AA-derived PGE2. Providing EPA with GLA has demonstrated the ability to inhibit delta-5 desaturase enzyme activity, the terminal enzyme responsible for the production of AA and the precursor of PGE2.

To test the in vivo effects of a GLA and EPA combination in humans, healthy adult volunteers consumed a controlled diet supplemented with 3 g/day of GLA and EPA. This supplementation strategy significantly increased serum levels of EPA, but did not increase AA levels. EPA and DGLA levels in neutrophil glycerolipids increased significantly during the 3-week supplementation period.

Most notably, a study in the *American Journal of Clinical Nutrition* demonstrated that fish oil, in conjunction with GLA, improved lipid and fatty acid profiles in women that measurably reduced their heart attack risk. A mixture of 4 g EPA+DHA and 2 g GLA favorably altered blood lipid and fatty acid profiles in healthy women. The group was estimated to have a 43% reduction in the 10-year risk of myocardial infarction.

Barham JB, Edens MB, et al. Addition of Eicosapentaenoic Acid to Gamma-Linolenic Acid-Supplemented Diets Prevents Serum Arachidonic Acid Accumulation in Humans. *J of Nutrition* 2000;130:1925-1931.

Laidlaw M, Holub BJ. Effects of supplementation with fish oil-derived n-3 fatty acids and gamma-linolenic acid on circulating plasma lipids and fatty acid profiles in women. *Am J of Clinical Nutrition* 2003;77(1):37-42.

Palombo JD, DeMichele SJ, Lydon E, Bistrrian BR. Cyclic vs continuous enteral feeding with omega-3 and gamma-linolenic fatty acids: effects on modulation of phospholipid fatty acids in rat lung and liver immune cells. *JPEN J Parenter Enteral Nut* 1997 May-Jun;21(3):123-32.

FEATURED PRODUCT

ProEFA® Xtra

ProEFA Xtra contains exceptionally high levels of EPA, DHA, and GLA to increase beneficial prostaglandins PGE1 and PGE3, and reduce detrimental PGE2.

ProEFA Xtra is formulated specifically for:

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- Joint flexibility and improved mobility*
- Cellular homeostasis and resolution*
- Beneficial prostaglandins PGE1 and PGE3*



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* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.