

## ESSENTIAL FATTY ACIDS (INCL. TRANSFATTY ACIDS) IN BLOOD

Essential fatty acids belong to the category of essential nutrients, substances in food which are absolutely necessary for good health and which humans can't synthesise from food.

Fatty acids serve as source of energy, they are important components of cell membranes and they are precursors to a special class of hormones, the eicosanoids (prostaglandins, thromboxanes and leukotrienes). The eicosanoids are a complex system of control molecules. Often various eicosanoids have opposing actions. For instance, prostaglandin E-1 (derived from gamma-linolenic/linoleic acid) is anti-inflammatory and prostaglandin E-2 (derived from arachidonic acid) promotes inflammation. Because fatty acids function relative to each other, a balanced intake is crucial for good health (also, see the Figure on the next page). It can be seen that by modulating dietary precursors of the prostaglandins, inflammation may be reduced.

The essential fatty acids are all cis forms of fatty acids. The trans forms do not occur in nature, and are metabolic poisons. They are produced by manufacturing processes to harden oils.

### THE TEST

The essential fatty acids are determined in the membranes of red bloodcells, which gives a good indication of the essential fatty acid status over a long period. (Plasma values give information about the status at the time of sample collection).

The following essential fatty acids and fatty acid metabolites are determined (only as a panel)

#### Omega -3 family

18:3 Alpha-linolenic (ALA)  
20:3 Eicosatrienoic  
20:5 Eicosapentaenoic (EPA)  
22:6 Docosahexaenoic (DHA)

#### Omega-6 family

18:2 Linoleic (LA)  
18:3 Gamma-linolenic (GLA)  
20:2 Eicosadienoic (EDA)  
20:3 Dihomogammalinolenic (DGLA)  
20:4 Arachidonic (AA)

22:4 Docosatetraenoic (DTA)

#### Omega-9 family

18:1 Trans Elaidic  
18:1 Cis Oleic  
20:1 Eicosenoic  
22:1 Euricic  
24:1 Nervonic

#### Saturated:

16:0 Palmitic  
18:0 Stearic

### TEST INDICATIONS

- Allergy
- Arthritis
- Attention deficit
- Autoimmun disorders
- Bronchial asthma
- Cancer
- Eczema
- Heart disease
- Hypertension
- Premenstrual syndrome
- Psoriasis
- Skin disorders
- Ulcerative colitis/ulcers (duodenal / gastric)

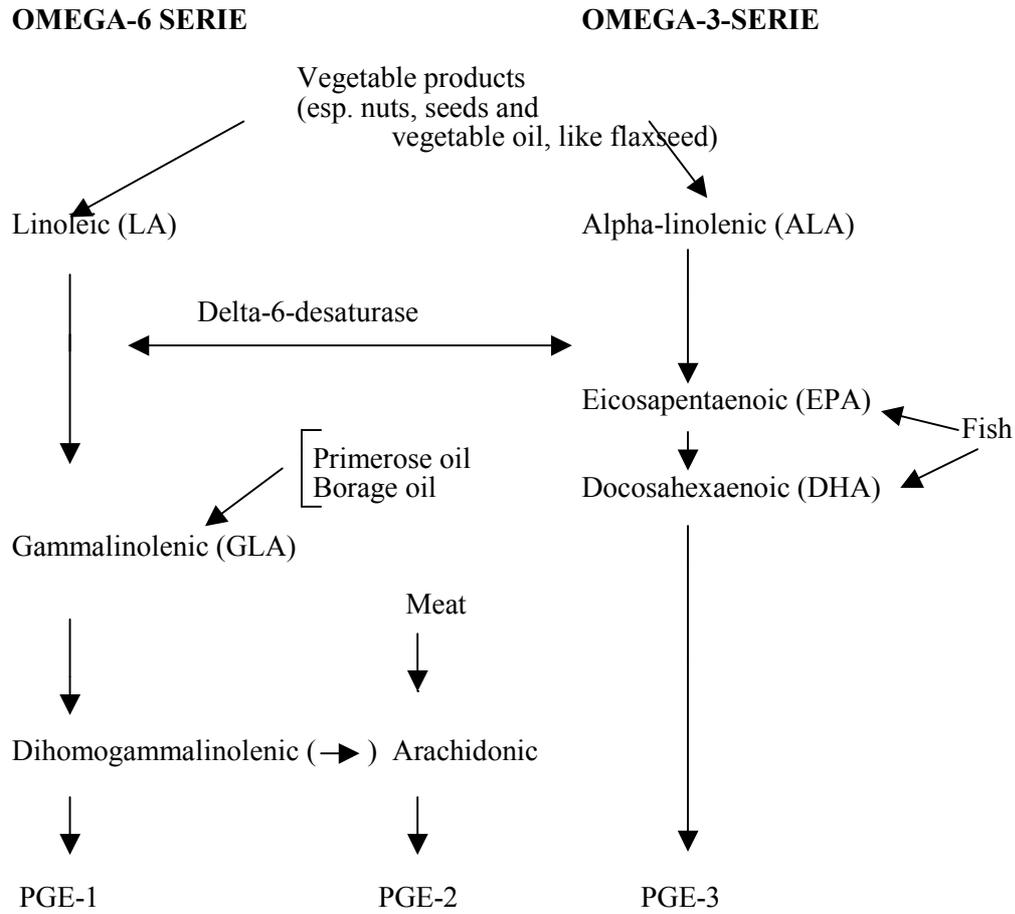
### COMPLEMENTARY TESTS

- Vitamins in blood
- Elements in blood or hair
- Stress test

### LITERATURE

- Melvyn R. Werbach. Nutritional influences on illness. A sourcebook or clinical research. Third Line Press. USA, 1993.
- Melvyn R. Werbach. Nutritional influences on mental illness. A sourcebook or clinical research. Third Line Press. USA, 1999.

FIGURE: the conversion of omega-3 and omega-6 fatty acids to prostaglandins.



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