

# Essential Fatty Acid (EFA) Metabolism

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## Omega-6 Fatty Acids

### Linoleic Acid (LA)

(safflower, corn, sunflower (not "high oleic"))

delta-6-  
desaturase

### Gamma-Linolenic Acid (GLA)

(borage 20%, black current seed 15% evening primrose 9%)

### Di-Homo-Gamma-Linolenic Acid (DGLA)

(human milk)

delta-5-  
desaturase

### Arachidonic Acid (AA)

(animal fats including dairy)

cyclo-  
oxygenase

lipo-  
oxygenase

Series 2  
Eicosanoids  
Prostaglandin E2  
(PRO-inflammatory)

Series 4  
Eicosanoids  
Leukotriene B4  
(PRO-inflammatory)

## Omega-3 Fatty Acids

### Alpha-Linolenic Acid (LNA)

(flax, hemp, soy, canola)

delta-6-  
desaturase

### Steridonic Acid (SDA)

(black current seeds)

### Eicosa-tetra-enoic Acid

delta-5-  
desaturase

### Eicosa-Penta-enoic Acid (EPA)

(salmon, trout, mackerel, sardines)

cyclo-  
oxygenase

lipo-  
oxygenase

Series 3  
Eicosanoids  
Prostaglandin E3  
(ANTI-inflammatory)

Series 5  
Eicosanoids  
Leukotriene B5  
(ANTI-inflammatory)

X = blocked or deficient

enzyme impaired by:  
stress, aging, alcohol,  
trans fatty acids, high  
insulin, high cholesterol,  
low Mg, Zn, B1, B6 and  
competition

competition for  
enzyme between  
parallel pathways

competition for  
enzyme between  
parallel pathways

Series 1  
Eicosanoids  
Prostaglandin E1  
(ANTI-inflammatory)

Series 2  
Eicosanoids  
Prostaglandin E2  
(PRO-inflammatory)

Series 4  
Eicosanoids  
Leukotriene B4  
(PRO-inflammatory)

Series 3  
Eicosanoids  
Prostaglandin E3  
(ANTI-inflammatory)

Series 5  
Eicosanoids  
Leukotriene B5  
(ANTI-inflammatory)

Docosa-Hex-enoic Acid (DHA)  
(same source as EPA)