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How Sesame Lignans Enhance the Effects of GLA

If you take gamma linolenic acid (GLA), new information indicates that sesame lignans could enable the GLA to work much better in the body.

When GLA is absorbed into the blood, it is first broken down to the biologically active di-homo gamma linolenic acid (DGLA). From there DGLA can go in two directions, one of them highly beneficial, the other possibly detrimental.

The beneficial route involves the DGLA being converted into an inflammatory-suppressing hormone-like substance called prostaglandin E1. The undesirable route involves DGLA being converted into arachidonic acid, which is a precursor to pro-inflammatory prostaglandin E2 and leukotriene B4.¹⁻⁶



Sesame lignans suppress the enzyme (delta-5 desaturase) that converts DGLA into arachidonic acid. By blocking the undesirable enzyme (delta-5 desaturase), more DGLA is available for conversion into beneficial prostaglandin E1.⁷⁻¹²



Enlarge Chart

The chart shows that GLA can follow a pro-inflammatory or anti-inflammatory pathway in the body.

If you study the chart, it provides insight as to why certain people are more vulnerable to inflammatory-related problems. Those with high delta-5 desaturase levels convert a lot of their dietary fats into arachidonic acid, while those with low delta-5 desaturase should transform their dietary fat into beneficial prostaglandin E1.

What the chart does not reveal is what causes delta-5 desaturase to increase or decrease. Scientists have not identified all the factors yet, but we do know that insulin activates delta-5 desaturase while EPA (from fish and other omega-3 oils) limits it.^{3,13-21} Epidemiological data conclusively shows that excess insulin is very dangerous, while diets high in omega-3 oils are very

beneficial.^{3,22}

Obesity, excess insulin (hyper- insulinemia), chronic inflammation and its related diseases go hand in hand. Since insulin activates delta-5 desaturase, which then transforms DGLA into the pro-inflammatory precursor arachidonic acid, we can understand why obese people suffer from so many inflammatory disorders.^{23,24}

It is important to note that gamma linolenic acid (GLA) can be naturally formed in the body from the ingestion of linoleic acid, an omega-6 fat that almost everyone consumes. Even those who do not take GLA can benefit from supplements that suppress excess delta-5 desaturase—for example, fish oil and insulin-suppressing agents such as PGX™ (soluble fiber blend). Sesame lignans, however, may be the most effective way of reducing the delta-5 desaturase enzyme.

It should be noted, however, that the first step in the natural conversion process that transforms linolenic acid to GLA is controlled by another enzyme called D6D (delta-6 desaturase). Unfortunately, D6D activity declines with age and other factors such as excess consumption of trans fats and alcohol.^{25,26} As highlighted in the chart, GLA supplementation can circumvent impaired D6D function by providing gamma linolenic acid directly to the body.²⁷

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