RESEARCH REPORT

FLAXSEED

Nature's best source of omega-3 oils and lignans.

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Flax, one of the world's most ancient cultivated plants, offers significant benefit in many diseases linked to modern living, including the three major killers of Americans: heart disease, cancer, and strokes. The optimal method of gaining the health promoting benefits of flax is by using a high in lignan flaxseed oil. Such a product will be rich in the two major healing factors in flax—omega-3 fatty acids and lignans.

A quick guide to fats and oils

Most Americans are now fully aware of the link between a diet rich in fat, and cancer and other diseases. However, what they may not realize is that upon closer examination of the data it is clear the culprit is saturated fat. Saturated fats are typically animal fats that are semi-solid to solid at room temperature, while vegetable fats are liquid at room temperature and are referred to as unsaturated fats or oils.

A diet low in saturated fat, but high in unsaturated fat has actually been shown to exert a protective effect against heart disease and cancer due to the presence of two fats which function as essential fatty acids. Despite the fact that most Americans eat too much fats and oils, most Americans are deficient in these two essential fatty acids. Making matters worse, both saturated fats and the partially hydrogenated fats found in margarine, shortening, and most prepared foods actually inhibit the body's utilization of essential fatty acids. In a nutshell, it can be stated that saturated fats, trans fatty acids, and partially hydrogenated fats are bad, while the essential fatty acids are good.

The two essential fatty acids—linoleic and alpha-linolenic acid function as components of all cell membranes as well as hormone-like substances known as prostaglandins. Although both linoleic acid and alpha-linolenic acid are 18 carbon length fatty acids, alpha-linolenic acid has three unsaturated bonds while linoleic acid has only two. The location of the first unsaturated bond is different as well. Alpha-linolenic acid's first unsaturated bond occurs at the third carbon, hence it is known as an omega-3 oil. Linoleic acid's first double bond is at the sixth carbon, hence it is an omega-6 oil.

Largely because linoleic acid and alpha-linolenic acid form entirely different prostaglandins, researchers and physicians are finding that by manipulating the type of dietary oils they can dramatically alter body function and, in some cases, treat disease. The omega-3 oils are showing the greatest promise in this regard.

The reason the omega-3 oils are the most beneficial is the standard American diet is severely deficient in these beneficial oils. Based on substantial evidence, it is estimated that the level of omega-6 oil in the body tissues of most Americans is 20 times the level of omega-3. Most experts in fatty acid nutrition believe the optimum ratio of omega-6 to omega-3 oils is between 3:1 and 4:1.

Establishing a more optimal ratio by supplementing omega-3 oils can result in significant improvement in how the body works because of the far-reaching effects of the hormone-like prostaglandin substances produced by the omega-3 oils. Some conditions improved by supplementing the diet with omega-3 oils include:

- high cholesterol levels
- prevention of strokes and heart attacks
- angina
- high blood pressure
- rheumatoid arthritis
- multiple sclerosis
- psoriasis and eczema
- cancer prevention and treatment

Flax oil vs. fish oils

While much of the research has featured fish oils, recent evidence indicates that flaxseed oil, nature's richest source of omega-3 oils, may have far greater benefit at a much reduced price. Hundreds of detailed scientific studies have shown supplementation with fish oils demonstrates many impressive effects, especially in improving cardiovascular function including lowering cholesterol levels and blood pressure. Fish oils are composed of two fatty acids (eicosapentaenoic acid or EPA; and docosahexanoic acid or DHA) which can be manufactured in the human body from alpha-linolenic acid, the chief fatty acid found in flaxseed oil.

A recent clinical study demonstrated that approximately 1.5 ta- →

blespoons of flaxseed oil increased tissue levels of EPA comparable to those levels achieved in studies using fish oils. The key to achieving high tissue levels with flaxseed oil is restricting omega-6 oil intake. To do this, simply eliminate or avoid vegetable oils rich in linoleic acid. The results of this recent study are significant for several reasons with the most important being that flaxseed oil can be used instead of fish oils.

The primary benefits of flaxseed oil over fish oils are cost and safety. In order to achieve dosages used in the positive clinical studies with fish oils, a person would have to spend over $70 a month for fish oils while a month's supply of flax oil is only $12.

The safety question is based on several studies showing fish oil supplements to be contaminated with toxic derivatives known as lipid peroxides. While extra vitamin E and other antioxidant nutrients offer some protection against these compounds, in general, it is a good idea to avoid the intake of lipid peroxides.

Flax oil vs. GLA products

Flaxseed oil is quickly emerging as the preferred essential fatty acid supplement. Flaxseed oil offers significant advantages over other essential fatty acid sources including evening primrose, black currant, and borage oil. These oils contain gamma-linolenic acid, an omega-6 fatty acid that eventually acts as a precursor to some favorable prostaglandins. Although quite popular, the research on GLA supplements is controversial and not as strong as the research on omega-3 oils. Because GLA can be formed from linoleic acid, it is difficult to determine the extent the effects are due to GLA vs. linoleic acid. Most sources of GLA are much richer in linoleic acid than GLA. For example, evening primrose contains only 9 percent GLA, but contains 72 percent linoleic acid.

There is concern that GLA supplements may offer only short-term benefit because they tend to actually increase tissue levels of arachidonic acid, another fatty acid which forms prostaglandins which actually promotes many negative events, such as increased inflammation and blood platelet clotting. This concern is most obvious in the studies of rheumatoid arthritis. While some short-term studies have shown benefit with evening primrose oil or borage oil supplementation, other studies showed a worsening of pain and inflammation due to increased tissue levels of arachidonic acid. In contrast, both short-term and long-term studies with omega-3 oils in rheumatoid arthritis have demonstrated a reduction of pain and inflammation along with a reduction in tissue levels of arachidonic acid.