

THE NUTRITIONAL PROPERTIES OF HEMP SEED OIL

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GROWING INTEREST IN “NATURAL” HEALTH CARE

Health professionals agree that poor nutrition may play an important role in diseases common in Western society such as high blood pressure, heart disease, diabetes, obesity and cancer. Genetic defects in the processing of dietary nutrients also contribute to the onset of several health-related disorders. Currently there is a growing desire by consumers to assume more responsibility for their overall health. For example, dietary concerns of an aging population have moved away from preventing deficiency diseases to the prevention of chronic disease. Consumers are becoming more aware of the relationship between diet and disease and are increasing more interested in “natural” rather than “synthetic” medications. In recent years, there has been a growing consumer dissatisfaction and mistrust of drugs prescribed by physicians. Consumers, health care practitioners and government agencies are interested in reducing health care costs through lowering the risk of disease. It has been estimated that every \$5 spent on preventive care saves \$30 in medical care. Of greatest significance to this “mega-trend” is the aging of the “baby boomers” – one person turns fifty years of age every seven seconds in the U.S.

These demographic and societal trends have led to increased interest in what are referred to in Canada as “nutraceuticals” and “functional foods”. Health Canada (1996) defines a nutraceutical as a product that has been isolated or purified from foods and generally sold in medicinal forms not usually associated with food. They have demonstrated to have a physiological benefit or provide protection against chronic disease. According to Health Canada (1996), a functional food is similar in appearance to a conventional food and is consumed as part of the usual diet. These foods have demonstrated physiological benefits, and/or reduce the risk of chronic disease beyond basic nutritional functions.

There are many different sources of nutraceuticals that have shown promise in disease reduction, one of the most encouraging being the **ESSENTIAL FATTY ACIDS (EFA)**. The oil from **HEMP SEED** is gaining widespread approval by the nutrition community because it contains a very well balanced mixture of EFA, and may just be one of the most effective dietary supplements for the maintenance of optimal health.

THE FATTY ACID PROFILE OF HEMP SEED OIL IS UNIQUE

HEMP SEED OIL is produced by pressing the hemp seed. The oil can be eaten on its own, blended into other food and body care products or used as a lubricant.

HEMP SEED OIL is truly unique. Approximately 80 per cent of the oil is comprised of polyunsaturated fatty acids. Specifically, **HEMP SEED OIL** contains the EFAs called linolenic acid (LA - an “omega-6” EFA) and alpha linolenic acid (ALA - an “omega-3” EFA) . These EFAs cannot be synthesized by the body and must be obtained from our diets. **HEMP SEED OIL** is also unique in that it is a rare plant source of the omega-6 EFA, gamma linolenic acid (GLA). Modern day diets and sluggish enzyme activity often impair the synthesis of GLA in the body and which cause GLA deficiency.

**FATTY ACID PROFILE OF HEMP SEED OIL
IN COMPARISON TO OTHER PLANT OILS**

| <u>OIL</u> | <u>SATURATED</u> | <u>LINOLEIC</u> | <u>GAMMA LINOLENIC</u> | <u>ALPHA LINOLENIC</u> |
|-------------------------|------------------|-----------------|------------------------|------------------------|
| HEMP | 8.0% | 56.0% | 2.0% | 20.0% |
| Evening Primrose | 8.0% | 73.0% | 10.0% | trace |
| Black Current | 8.0% | 47.5% | 15.0% | 13.3% |
| Borage | 13.0% | 37.5% | 23.0% | trace |
| Flax | 9.0% | 14.0 % | nil | 58.0% |

SATURATED FATTY ACIDS (SFA) - LOW IN HEMP SEED OIL

High levels of dietary SFA are one of the primary factors which increase blood cholesterol levels, a major risk factor for coronary heart disease. **HEMP SEED OIL** contains only 8.0% total SFAs.

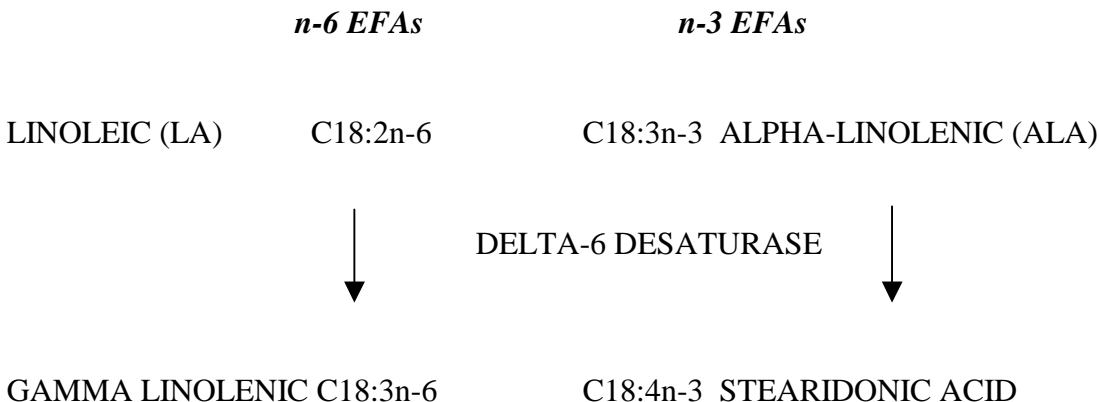
POLYUNSATURATED FATTY ACIDS (PUFA) - WELL BALANCED IN HEMP SEED OIL

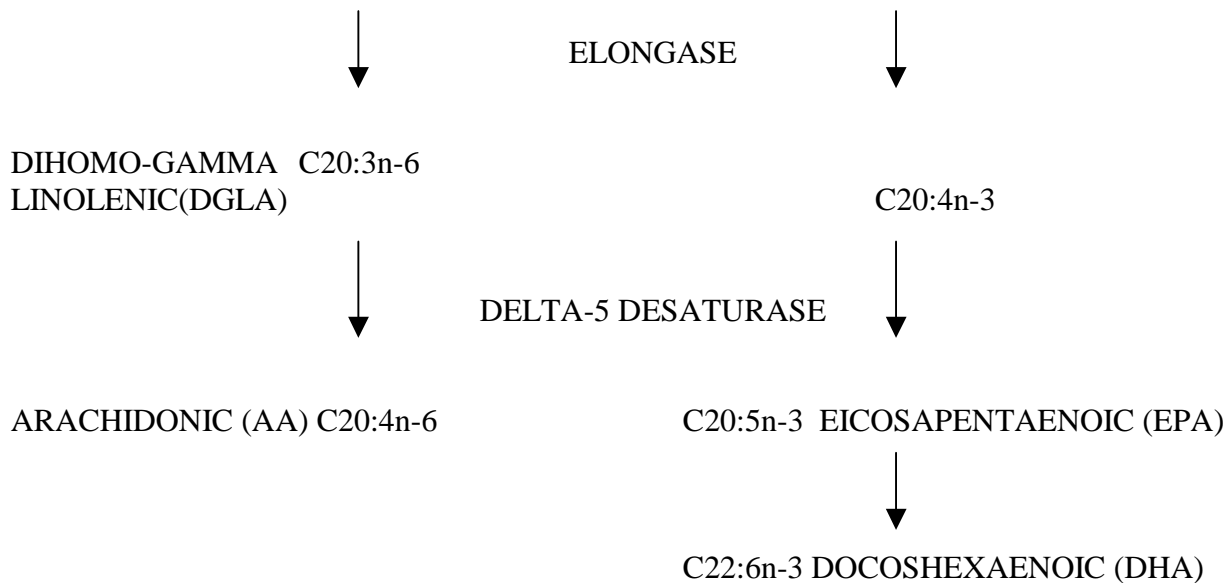
HEMP SEED OIL contains the highest **TOTAL** amount of the essential PUFAs of both the omega-6 (LA & GLA) and the omega-3 (ALA) fatty acid families in a three to one ratio that provides an **IDEAL NUTRITIONAL BALANCE**.

LA and ALA are important structural components of the membranes that surround all body cells, providing stability and controlling the movement of all substances into and out of cells. LA and ALA can also lower blood cholesterol.

LA is converted in the body into GLA, the synthesis which as indicated earlier, can be negatively effected by many factors. ALA is converted in the body into a PUFA called EICOSAPENTAENOIC ACID (EPA). GLA and EPA have important physiological effects (See Figure 1).

Figure 1: METABOLIC PATHWAY of EFAs in the BODY





CHEMICAL MESSENGERS FROM PUFA CONTROL BODY FUNCTIONS

GLA through its synthesis to DGLA, and ALA through conversion to EPA, are further metabolized in our bodies to eicosanoids, short-lived, powerful hormone-like chemicals that regulate all cellular function. Many health problems and their symptoms are related to a deficiency or imbalance of EFAs and eicosanoids.

- DGLA, AA & EPA are converted into eicosanoids which control a number of body functions including blood clotting; inflammation; haemorrhage; constriction and dilation of the blood vessels; blood pressure and immune function.
- Eicosanoids derived from AA are pro-inflammatory; cause constriction of blood vessels; induce inflammation and stimulate blood clotting. DGLA & EPA (from GLA & ALA) reduce the synthesis of these messengers.
- DGLA derived eicosanoids reduce inflammation; widen blood vessels; reduce the tendency for blood platelets to clot; help to lower blood pressure; and lower blood and body cholesterol levels.
- Eicosanoids derived from EPA also help to reduce inflammation; widen blood vessels; and reduce the tendency for blood platelets to clot.

Because of its unique levels of LA, GLA and ALA the **consumption of HEMP SEED OIL results in the production of eicosanoids with BENEFICIAL EFFECTS.**

CLINICAL RESEARCH ON EFAs

Heart disease and stroke are among the top causes of death in Canadians. EFAs have been shown to reduce the risk of these diseases by lowering blood cholesterol and blood pressure and reducing blood platelet coagulation (clotting). These fatty acids can also reduce inflammation, making them beneficial for individuals suffering from osteoarthritis, rheumatoid arthritis, eczema and psoriasis.

Research with EFA supplements of GLA and ALA has shown promise in a number of areas due in part to the synthesis of eicosanoids with beneficial functions. This research includes the following disorders:

- *Cancer*
- *Diabetes*
- *High Blood Cholesterol and Coronary Heart Disease*
- *High Blood Pressure*
- *Rheumatoid Arthritis & Inflammation*
- *Skin Conditions – Atopic Dermatitis, Eczema, Psoriasis*

Because **HEMP SEED OIL** contains a well balanced mixture of EFA, it is one of the most effective dietary supplements for the maintenance of optimal eicosanoid metabolism. In addition, **HEMP SEED OIL** contains plant sterols that have been shown to reduce the risk of prostate and colon cancer and to lower blood cholesterol levels.

THE IMPORTANCE OF EFA BALANCE

The ratio of omega-6:omega-3 EFAs in vegetable oils is a hotly debated topic among nutritionists. Omega-6 and omega-3 EFAs work synergistically at the cellular level to ensure effective eicosanoid synthesis. An excess of either can cause an imbalance in eicosanoid metabolism. An excess intake of omega-3 EFAs can be dangerous for people with clotting disorders or those on blood thinners. Excess intakes of omega-6 EFAs can also cause problems. The point being that dietary EFA balance is important. Leading experts such as the Scientific Review Committee of Health Canada and the World Health Organization have recommended that the ratio of intake of omega-6 PUFAs to omega-3 PUFAs should range from 4:1 to 10:1. **HEMP SEED OIL with its 3:1 ratio is the closest naturally-occurring oil to this ideal range.** Put simply, **HEMP SEED OIL** contains three omega-6 EFAs for each omega-3 EFAs. It also contains about 2% GLA, giving omega-6 conversion an advantage related to eicosanoid synthesis.

So what does this mean for daily intakes? Nutritionists generally recommend that, for EFAs to provide optimal cell function, daily requirements should range from 7 to 11 g of LA and from 2 to 3.5 g of ALA. This can be obtained from one tablespoon of **HEMP SEED OIL**. However, individuals who consume a diet high in SFAs or *trans* fatty acids will require more, as will people who are overweight or under a great deal of stress.

HEMP SEED OIL AS AN EFA SUPPLEMENT

Hemp is one of our oldest and most versatile plants and has been documented for various uses as far back as early as the 28th century BC. Hemp belongs to the genus *Cannabis sativa* and has been cultivated for thousands of years in temperate climates as a source of fibre, edible seeds, edible oil, a lubricant and as a fuel. Hemp production has recently experienced a revival as clothing from hemp fibre gains in popularity and the health benefits of the oil become better recognized.

HEMP SEED OIL does not have any psychoactivity because it does not contain tetrahydrocannabinol, a sticky resin produced primarily in the flowering tops of female plants before the seeds mature. Health Canada stipulates that all hemp seed products must contain less than 10 parts per million of THC and every hemp crop in Canada is tested to ensure these standards are maintained.