

The importance of biodegradable bio-oil - SUNFLOWER

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Introduction



Healthy natural sunflower oil is produced from oil type sunflower seeds. It is the non-volatile oil expressed from sunflower (*Helianthus annuus*) seeds of asteraceae family. The sunflower oil is interesting by its content in linoleic acid. Sunflower oil is light in taste and appearance and supplies more Vitamin E than any other vegetable oil. It is a combination of monounsaturated and polyunsaturated fats with low saturated fat levels. Sunflower oil is high in the essential vitamin E and low in saturated fat¹. It has been shown to have cardiovascular benefits. It is used in food industry (dressings, seasoning, frying and other preparations). In the cosmetic industry, it is recognized for its hydrating and restructuring functions. In pharmacy it is used for the treatment of cholesterol and atherosclerosis.

Types:

There are two types of sunflower oil available

- Linoleic **Sunflower oil**
- high oleic **sunflower oil**

All are developed with standard breeding techniques. They differ in oleic levels and each one offers unique properties.

Linoleic sunflower oil has a high content of essential fatty acids like linoleic acid. It is an excellent home

cooking oil and salad oil with a light, clean taste, high smoke point and low level of saturated fat².

High oleic sunflower oil is premium sunflower oil with monounsaturated levels of 80% and above. It is used in food and industrial applications where high monounsaturated levels are required.

Variation in unsaturated fatty acids profile is strongly influenced by both genetics and climate.

Types of Sunflower Oil and Their Fatty Acid Profiles

Type	Oleic/ Monounsaturated	Linoleic Acid/ Polyunsaturated	saturated
Linoleic	20%	69%	11%
High Oleic	82%	9%	9%

Composition: Sunflower oil contains predominantly linoleic acid in triglyceride form. The British Pharmacopoeia lists the following profile:

- Palmitic acid : 4 - 9%,
- Stearic acid : 1 - 7%,
- Oleic acid :14 - 40%,
- Linoleic acid: 48 - 74%.

Sunflower oil also contains lecithin, tocopherols, carotenoids, and waxes. It has a high Vitamin E content. It is a combination of mono-unsaturated and polyunsaturated fats with low saturated fat levels.

Physical properties:

Sunflower oil is liquid at room temperature. The refined oil is clear and slightly amber-colored with a slightly fatty odor. Sunflower oil is light in taste and appearance.

Smoke point:

The **smoke point** refers to the temperature at which a cooking fat or oil begins to break down. The substance smokes or burns, and gives food an unpleasant taste. Smoke point gives the information about the temperatures and therefore what purposes a particular

fat may be used for (for instance, deep frying is a very high-temperature process and requires a fat with a high smoke point). Beyond the smoke point is the flash point, the point at which combustion occurs.

Smoke point (refined)	232 °C	450 °F
Smoke point (unrefined)	227 °C	440 °F
Density (25 °C)	917 kg/m ³	
Refractive index (25 °C)	≈1.473	

Traditional healthy cultural diet:

There are many different traditionally healthy cultural diets. These traditionally healthy cultural diets have several things in common, such as the emphasis on plenty of grain products, fruits, and vegetables. In addition, many cultures consume largely plant-based diets. Many cultural diets also distinguish between healthy fats from plant based sources, such as vegetable oils, sunflower seeds, nuts, and olives, versus cholesterol-raising fats from animal sources ³.



THE TRADITIONAL HEALTHY ASIAN DIET PYRAMID

Health benefits:

Sunflower oil is very high in polyunsaturated fat. sunflower oil fatty acid composition ranges between 64 and 68 percent. From a nutritional standpoint, this is desirable, because polyunsaturates are the source of essential fatty acids necessary for the production of prostaglandins. Prostaglandins play major roles in protecting the cardiovascular, reproductive, immune and central nervous systems. Without enough prostaglandins, we are vulnerable to a variety of disease conditions, including arthritis and allergies⁴.

Improves Cardiovascular System

It has become increasingly clear that sunflower oil is healthy for our cardiovascular system. It contains ample amounts of vitamin E and high levels of the essential fatty acids (or, polyunsaturated fats) which our body needs. These essential fatty acids cannot be produced from within our bodies. They must be derived from our diet. The reason we need these polyunsaturated fats is because they tend to lower our cholesterol levels. By reducing our cholesterol, we lessen the likelihood of developing heart disease⁵.

Sun flower oil as emollient:

Sunflower oil has been used as an ingredient in cosmetic products for years because of its emollient action. Sunflower oil is almost colorless, making it

ideal for use in cosmetics and other colored products. One of its main benefits as a skin care solution is its ability to help the skin retain moisture. Millions of people either apply it directly onto their skin, or use cosmetic products that contain sunflower oil, to avoid excess dryness. It is also used in the manufacture of soaps as it creates stable lather in soap. Of the 3 types, only high oleic oil can be used effectively in cosmetic formulations. Linoleic oil lack the necessary shelf life to be used in most skin care products.

Restaurant and food industry uses

Restaurants and food manufacturers are becoming aware of the health benefits of sunflower oil. The oil can be used in conditions with extremely high cooking temperatures. It may also help food stay fresher and healthier for longer periods of time . Food manufacturers are starting to use sunflower oil in an effort to lower the levels of trans fat in mass produced foods. A number of common snack foods contain sunflower oil.

Conclusion:

Natural sunflower oil is good for health as it possess many health benefits. Hence, it is healthy choice for cooking. Sunflower oil is an odorless oil, which benefits its use in fragrance, aromatherapy and massage oil products also.

References

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