

# Is Canola Oil Healthy?

By Bruce Fife, N.D. – Healthy Ways Newsletter – Spring 2012

Some people claim that canola is the healthiest of oils, even better than olive and coconut oils. Others say it is a genetically engineered monster that is 100 times more toxic than soy. Who is right?

Whenever I shop for food I always read ingredient labels. I won't buy anything until I know what's in it first. There are certain ingredients that I especially look for and avoid. One of these is canola oil. I won't touch it.

If you go to the grocery store or even a health food store you will see all types of foods proudly proclaiming they are made with canola oil. You see it in every type of food imaginable from frozen dinners and cookies to salad dressings and mayonnaise. In order to avoid *trans* fats in hydrogenated oils, many restaurants are now using canola oil for high temperature deep-frying. You can even buy it by the bottle for home use.

Canola oil has gained a reputation as one of the "good" fats because it is primarily a monounsaturated fat, like olive oil, which is regarded as one of the healthiest of all the fats. Many people claim canola oil is even better than olive oil because, next to flaxseed oil, it contains one of the highest amounts of omega-3 fats. Omega-3s are believed to help prevent heart disease. Olive oil contains no omega-3 fats. Canola also has less saturated fat than olive oil and a higher percentage of polyunsaturated fat (see chart below). Because of these things, canola oil has received a great deal of recognition as the "premiere" monounsaturated fat and is aggressively promoted as a health food by food producers. But how healthy is it really?

Fatty Acid Content in Olive and Canola Oils (%)		
Fatty Acids	Olive Oil	Canola Oil
Saturated Fatty Acids	14	7
Monounsaturated Fatty Acids	77 <sup>a</sup>	62 <sup>b</sup>
Polyunsaturated Fatty Acids	9	31 <sup>c</sup>

a. 100% oleic acid  
b. Mostly oleic acid with 1-2% erucic acid.  
c. 21% linoleic acid (omega-6) and 10% alpha-linolenic acid (omega-3). All of the omega-3 and much of the omega-6 is damaged during heat processing.

Olive oil is much more stable than canola oil because it contains less than 1% omega-3 fatty acids and a larger percentage of saturated and monounsaturated fatty acids.

Food producers have learned from years of experience that if they present a poor quality food as healthy, it will become a best seller. That is the situation with canola oil. The truth is, canola oil is not a healthy oil at all. In fact, it is one of the unhealthiest oils you could ever eat and you should avoid anything and everything that contains it. Let me explain why.

Canola oil is not a natural oil. It is a man-made oil never before seen in nature or eaten by humans until a few years ago thanks to the wonders of modern chemistry and biological manipulations. There is no such thing as a canola plant or a canola seed. Canola oil comes from hybridized, genetically modified rapeseed plants. In other words, it is a man-made variety of rapeseed. The name rapeseed is a fitting description to its unsavory character. The oil from natural rapeseed contains toxic substances known as glucosinolates and a particularly nasty fatty acid called erucic acid. Bugs won't eat rapeseed. The glucosinolates are natural insecticides with a bitter disagreeable taste. It is known to cause metabolic disorders in animals and, therefore, is not fit for animal or human consumption. In fact, it is illegal to sell rapeseed oil for human consumption.

Much of the caution against using rapeseed oil is due to its erucic acid content. Erucic acid is a 22 carbon long chain monounsaturated fatty acid. Animal studies have shown that erucic acid causes fatty deposits in the heart and cardiac fibrosis.[1-2] Cardiac fibrosis is an abnormal thickening of the heart valves and loss of flexibility, which can lead to valve dysfunction and heart failure. Erucic acid also lowers the ability of the heart to produce the energy it needs to function properly, again increasing risk of heart failure.[3] These effects can be observed even when erucic acid is reduced to as little as 2 percent.[4]

Rapeseed grows very well in cool climates such as in northern Europe and Canada. Most commercial crops don't fare well in these climates. Realizing the economic potential, Canadian plant breeders set out to develop a more palatable and safer rapeseed plant to use as animal feed that can thrive in the cool Canadian climate. Their primary goal was to reduce the glucosinolates but in so doing they also removed a gene responsible for producing most of the erucic acid. Natural rapeseed oil contains as much as 50 percent erucic acid. This new rapeseed oil had less than 5 percent, which would allow it to be sold as human food and greatly increase its marketing potential.

Originally, the new rapeseed oil was referred to as "LEAR" oil for "Low Erucic Acid Rapeseed." Fearful that consumers might question the sanity of eating "rapeseed oil" the developers coined the name "canola oil." The name is an acronym for "Canadian Oil Low-Acid" (Can. O. L. A.). The name "canola" rhymes with "granola" suggesting a natural or healthy product. Give a product a fancy new healthy sounding name and it is sure to sell well. It was immediately marketed as a heart-friendly monounsaturated oil with all the benefits of olive oil but even better because it has less saturated fat and up to 10 percent omega-3 fatty acids. Promoters praised canola oil as the ultimate healthy oil.

"Food grade" rapeseed oil (canola oil) is not entirely erucic acid-free. It is illegal to sell rapeseed oil for human consumption if it contains more than 2 percent erucic acid by weight in the USA and more than 5 percent in Europe. Although most of the erucic acid has been removed, would you want to eat an oil that contains even a small amount of a toxin that attacks the heart? Studies have shown that even as little as 2 percent can have detrimental effects on the heart and circulatory system. This is one of the reasons why canola oil is not allowed as an ingredient in baby food. It is also not recommended for breastfeeding mothers because erucic acid is deposited in the mother's milk fat. If canola oil is not good for babies, why would it be any better for adults?

A number of studies have evaluated the health effects of consuming canola oil. While it may help reduce total cholesterol and LDL (so-called bad) cholesterol like most other vegetable oils do, it also decreases HDL (good) cholesterol.[5] HDL cholesterol is believed to protect against heart disease and, therefore, reducing it increases the risk of heart attack and stroke. So, despite the spin promoters put on it, canola provides absolutely no benefit for the cardiovascular system.

When fed to lab animals canola oil causes an increase in blood pressure, promotes insulin resistance, increases risk of stroke, causes kidney lesions, and shortens life span.[6-10] While all

these effects are observed in animals, do you really want to be consuming a man-made oil that causes such problems? The reason for these conditions are not necessarily due solely to the fatty acid content of the oil, but may be caused by other yet unidentified substances unique to canola oil.[11]

One thing canola oil does is cause blood cells to become excessively ridged. When blood cells lose their flexibility they cannot fold and squeeze through the many miles of tiny capillaries dispersed throughout our bodies. Consequently, circulation is hindered and blood pressure rises. This character of canola oil is not caused by erucic acid but is believed to be a consequence of the unique phytosterols naturally found in the oil.[12-13] These sterols are absorbed into the blood cell membranes causing them to stiffen up. This hardening of the cell membrane may also affect permeability – the cells ability to absorb nutrients and expel waste, thus hindering their function. Since red blood cells carry oxygen throughout the body and remove carbon dioxide waste, this could pose a serious problem to overall health.

Because canola oil is composed mostly of monounsaturated fatty acids, it is believed to be more heat stable than most other vegetable oils that are composed predominately of polyunsaturated fatty acids. But studies show it produces free radical mutagenic byproducts just as readily as other vegetable oils when used in cooking.[14]

One of the supposed benefits of canola oil is its high omega-3 content. This “benefit,” however, is another reason why you shouldn’t eat it. Omega-3 fats are very delicate and highly sensitive to heat. That’s why you *never* heat flaxseed oil. The same is true with canola oil. It should *never ever* be heated, because when omega-3s are heated they quickly oxidize (become rancid) and produce cell-destroying molecular entities known as free radicals. This causes the polyunsaturated oils in it, including the omega-3s, to oxidize into free radicals and some to transform into toxic *trans* fatty acids. All the beneficial omega-3s in the oil are destroyed and turned into harmful substances.

The omega-3 polyunsaturated fatty acids in canola oil are the first to oxidize when the oil is heated and they do so very easily. The free radicals produced wreck havoc on the body. Antioxidants are quickly used up defending the body against these rogue molecules. After consuming canola oil the body’s protective antioxidant reserves are significantly depleted.[15] For example, Canadian researchers found that when they fed piglets formula containing canola oil the animals developed a vitamin E deficiency, even though the formula contained adequate vitamin E.[16] Vitamin E is one of our major antioxidant nutrients. A deficiency can lead to numerous health problems including anemia, muscle degeneration and weakness, and fibrocystic breast disease, as well as increase the risk of heart disease and cancer.

Alpha linolenic acid (ALA) is the omega-3 fatty acid found in flaxseed, canola, and other vegetable oils. When consumed, ALA is converted to eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), the same type found in fish. These latter two are the omega-3 fatty acids our bodies need and want.

When canola oil is heated, all the ALAs it contains are lost. None are converted to EPA or DHA. Therefore, the original omega-3 content in canola oil is totally lost.[17] Not only are the omega-3 fatty acids destroyed, but they have been transformed into very harmful substances.

There is no such thing as a “healthy” form of canola oil. Even if you use canola oil straight from the bottle as a salad dressing it has already been heat damaged. Canola oil is processed under high temperatures (over 300 degrees F/150 C). During the processing the ALAs are destroyed and *trans* fatty acids are created. Trans fatty acids are the most detrimental fats in our diet. Eating them

greatly increases risk of diabetes, heart disease, stroke, and autoimmune diseases. Even though the producers claim the oil contains a minimal amount of *trans* fatty acids (about 0.2 percent), research at the University of Florida measured levels up to 4.6 percent in store brands.[18] This is a large enough amount to be seriously concerned about, especially since the US Institutes of Medicine a few years ago publically stated that “no” amount of *trans* fatty acids are safe to consume. It is this statement that has led restaurants and food manufactures to reduce the amount of trans fatty acids in their foods.

Further damage is done to the oil when it is used in cooking either at home, in restaurants, or at a bakery. Canola oil is commonly used in cooking, including high- temperature deep frying. If you eat at a restaurant that claims it does not use oils with *trans* fatty acids but fries its food in canola oil, you are eating *trans* fatty acids. You might as well fry the food in Crisco shortening. When canola is cooked, you are taking a bad oil and making it even worse.

That’s not all. There’s still more to be concerned about. Virtually all the canola oil sold in stores or used in the food processing industry is genetically engineered. In other words, it has had genes replaced with genes from other plants or even bacteria or fungi. One of the reasons for doing this is to make the plants more tolerant to chemical pesticides. This way, farmers can dump tones of pesticides onto the genetically altered rapeseed plants without killing them. It is believed that using more pesticides will reduce insect damage, thus increase crop yields. This is why you will not find any canola oil that is marked “certified organic,” because it has all been genetically altered and heavily sprayed. The oil produced from these plants is also more likely to contain pesticide residue.

Safety studies have not been done on genetically engineered foods. We have no idea how altering the genes in foods can affect our health. We do know however, that in some cases they can cause sickness and death and are dangerous to the environment.

Don’t be fooled by food company propaganda promoting canola oil as a healthy choice. It’s one oil that is definitely not fit to eat.

## References

1. Engfeldt, B. and Gustafsson, B. Morphological effects of rapeseed oil in rats. III. Studies in germ-free rats. Acta Med Scand Supple 1975;585:41-46.
2. Engfeldt, B. and Brunius, E. Morphological effects fo rapeseed oil in rats. II. Long-term studies. Acta Med Scand Suppl 1975;585:27-40.
3. Borg, K. Physiopathological effects of rapeseed oil: a review. Acta Med Scand Suppl 1975;585:5-13.
4. Engfeldt, B. and Brunius, E. Morphological effects of rapeseed oil in rats. I. Short-term studies. Acta Med Scand Suppl 1975;585:15-26.
5. Lichtenstein, A.H., et al. Effects of canola, corn, and olive oils on fasting and postprandial plasma lipoproteins in humans as part of a National Cholesterol Education Program Step 2 diet. Arterioscler Thromb 1993;13:1533-1542.
6. Naito, Y., et al. Blood coagulation and osmolar tolerance of erythrocytes in stroke-prone spontaneously hypertensive rats given rapeseed oil or soybean oil as the only dietary fat. Toxicol Lett 2000;116:209-215.

7. Naito, Y., et al. Dietary intake of rapeseed oil or soybean oil as the only fat nutrient in spontaneously hypertensive rats and Wistar Kyoto rats—blood pressure and pathophysiology. *Toxicology* 2000;146:197-208.
8. Ohara, N., et al. Dietary intake of rapeseed oil as the sole fat nutrient in Wistar rats—lack of increase in plasma lipids and renal lesions. *J Toxicol Sci* 2008;33:641-645.
9. Naito, Y., et al. Rapeseed oil ingestion and exacerbation of hypertension-related conditions in stroke prone spontaneously hypertensive rats. *Toxicology* 2003;187:205-216.
10. da Costa, C.A., et al. Abdominal adiposity, insulin and bone quality in young male rats fed a high-fat diet containing soybean or canola oil. *Clinics (Sao Paulo)* 2011;66:1811-1816.
11. Ohara, N., et al. Exploration for unknown substances in rapeseed oil that shorten survival time of stroke-prone spontaneously hypertensive rats. Effects of super critical gas extraction fractions. *Food Chem Toxicol* 2006;44:952-963.
12. Ratnayake, W.M., et al. Vegetable oils high in phytosterols make erythrocytes less deformable and shorten the life span of stroke-prone spontaneously hypertensive rats. *J Nutr* 2000;130:1166-1178.
13. Ratnayake, W.M., et al. Influence of sources of dietary oils on the life span of stroke-prone spontaneously hypertensive rats. *Lipids* 2000;35:409-420.
14. Chen, Y.C., et al. Mutagenicity of fumes from fried chicken legs. *J Food Prot* 2003;66:1269-1276.
15. Naito, Y., et al. Thirteen-week dietary intake of rapeseed oil or soybean oil as the only dietary fat in Wistar Kyoto rats—change in blood pressure. *Food Chem Toxicol* 2000;38:811-816.
16. Sauer, F.D., et al. Additional vitamin E required in milk replacer diets that contain canola oil. *Nutrition Research* 1997;17:259-269.
17. Patten, G.S. and Abeywardena, M.Y. Fish oil feeding increases gut contractility in spontaneous hypertensive rat (SHR) model. *Asia Pac J Clin Nutr* 2003;12 Suppl:S64.
18. O'Keefe, S., et al. Levels of trans geometrical isomers of essential fatty acids in some unhydrogenated US vegetable oils. *J Food Lipids* 1994;1:165-176.

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