

Canola Oil: the Hidden History

PART ONE OF TWO

The public is being deluged with misinformation by the processed food oil industry. In response to a number of requests for additional information about canola oil, the following historical and scientific facts are presented. The data was collected from a variety of sources. Also included is information on other types of processed oils—as well as some good oils.

Olive oil comes from olives, peanut oil from peanuts, sunflower oil from sunflowers; but what is a canola? It is a product not found in nature. Yet, **canola oil is “widely recognized as the healthiest salad and cooking oil available to consumers.”** It was developed through hybridization of rape seed.

Rape seed oil is toxic because it contains significant amounts of a poisonous substance, called *erucic acid*. But canola oil not only contains some erucic acid but a variety of other harmful substances.

This is what the food industry says about canola oil: Canola oil contains only trace amounts of erucic acid and its unique fatty acid profile which is rich in oleic acid and low in saturated fats; this makes it particularly beneficial for the prevention of heart disease. It also contains significant amounts of omega-3 fatty acids, also shown to have health benefits.

This is what independent scientists and health researchers say about canola oil: Canola oil is a poisonous substance, an industrial oil that does not belong in the body. It contains “the infamous chemical warfare agent mustard gas,” hemagglutinins, and toxic cyanide-containing glycosides. It causes mad cow disease, blindness, nervous disorders, clumping of blood cells, and depression of the immune system.

How is the consumer to sort out the conflicting claims about canola oil? Is canola oil a dream come true or a deadly poison? And why has canola captured so large a share of the oils used in processed foods?

Let’s start with some history that you have not been told:

The story begins in the mid-1980s. The food industry had a problem. In collusion with the American Heart Association, numerous government agencies, and departments of nutrition at major universities, the industry had been promoting polyunsaturated oils as a heart-healthy alternative to “artery-clogging” saturated fats.

Unfortunately, it had become increasingly clear that polyunsaturated oils, particularly corn oil and soybean oil, cause numerous health problems, especially cancer (*M.G. Enig and S.W. Fallon. The Oiling of America. www.westonaprice.org/oiling.htm*).

If the news became widely known, it would affect industry sales of large amounts of liquid polyunsaturated oils; and it would make it difficult to make health claims about them in the face of mounting evidence of their dangers. Nor could manufacturers return to using traditional healthy saturates (palm oil and coconut oil) because those fats cost too much for the cutthroat profit margins in the industry.

The solution was to embrace the use of monounsaturated oils, such as olive oil. Studies had shown that olive oil has a “better” effect than polyunsaturated oils on cholesterol levels and other blood parameters. Besides, Ancel Keys and other health promoters had popularized the notion that a diet rich in olive oil protected against heart disease and ensured a long and healthy life.

Two industry seminars were held to discuss the problem. The *National Heart, Lung and Blood Institute* (NHLBI) sponsored the *First Colloquium on Monounsaturates* in Philadelphia. The meeting was chaired by Scott Grundy, a prolific writer and apologist for the notion that cholesterol and animal fats cause heart disease. Representatives from the edible oil industry, including Unilever, were in attendance.

The *Second Colloquium on Monounsaturates* took place in Bethesda, Maryland, early in 1987. Dr. Grundy was joined by Claude Lenfant, head of the NHLBI. And speakers included Fred Mattson, who had spent many years at Proctor and Gamble, and the Dutch scientist Martign Katan, who would later publish research on the problems with trans fatty acids. It was at this time that articles extolling the virtues of olive oil began to appear in the popular press.

Promotion of olive oil, which had a long history of use, seemed more scientifically sound to the health-conscious consumer than the promotion of corn oil and soybean oil, which could only be extracted with modern stainless steel presses. *The problem for the industry was that there was not enough olive oil in the world to meet its needs.* And, like butter and other traditional fats, olive oil was too expensive to use in most processed foods. The industry needed a less expensive monounsaturated oil.

Rapeseed oil was a monounsaturated oil that had been used extensively in many parts of the world, notably in China, Japan, and India. It contains almost 60 percent monounsaturated fatty acids (compared to about 70 percent in olive oil). Unfortunately, **about two-thirds of the monounsaturated fatty acids in rapeseed oil are erucic acid**, a 22-carbon monounsaturated fatty acid that had been associated with Keshan’s disease, characterized by fibrotic lesions of the heart.

In the late 1970s, using a technique of genetic manipulation involving seed splitting (*R.K. Downey, Genetic Control of Fatty Acid Biosynthesis in Rapeseed. Journal of the American Oil Chemists' Society, 1964;41:475-478.*), Canadian plant breeders came up with a variety of rapeseed that produced a mono-unsaturated oil low in 22-carbon erucic acid and high in 18-carbon oleic acid.

The new oil, referred to as LEAR oil for *Low-Erucic-Acid Rapeseed*, was slow to catch on in the U.S. In 1986, Cargill announced the sale of LEAR oil seed to U.S. farmers and provided LEAR oil processing at its Riverside, North Dakota plant; but prices dropped and farmers took a hit (*Journal of the American Oil Chemists' Society, December 1986;63(12):1510*).

Before LEAR oil could be promoted as a healthy alternative to polyunsaturated oils, it needed a new name. Neither “rape” nor “lear” could be expected to invoke a healthy image for the new “Cinderella” crop. In 1978, the industry settled on “canola,” for “Canadian oil,” since most of the new rapeseed at that time was grown in Canada.

“Canola” also sounded like “can do” and “payola,” both positive phrases in marketing lingo. However, the new name did not come into widespread use until the early 1990s.

An initial challenge for the Canola Council of Canada was the fact that rapeseed had never been given GRAS (*Generally Recognized as Safe*) status by the U.S. Food and Drug Administration. A change in regulation would be necessary before canola could be marketed in the U.S. (*Canola - a new oilseed from Canada. Journal of the American Oil Chemists' Society, September 1981:723A-9A*). Just how this was done has not been revealed, but GRAS status was granted in 1985. Why? Because the Canadian government paid the FDA the sum of \$50 million to have rape registered and recognized as “safe” (*Source: John Thomas, Young Again, and others*).

Canola was primarily aimed at the growing numbers of health-conscious consumers rather than the junk food market. Therefore more subtle marketing techniques than merely television advertising were needed. The industry had managed to manipulate the science, to make a perfect match with canola oil: It claimed it to be very low in saturated fat, very rich in monounsaturates, and very safe healthwise (*Canola - a new oilseed from Canada. Journal of the American Oil Chemists' Society, September 1981:723A-9A*).

In addition, canola oil contains about 10 percent omega-3 fatty acids—the most recent discovery by establishment nutritionists. Most Americans are deficient in omega-3 fatty acids, which had been shown to be beneficial to the heart and immune system. The challenge was to market this dream-come-true fatty acid profile in a way that would appeal to educated consumers.

Canola oil began to appear in the recipes of cutting edge health books, such as those by Andrew Weil and Barry Sears. The technique was to extol the virtues of the Mediterranean diet and olive oil in the text and then call for “olive oil or canola oil” in the recipes. Very clever. One informant in the publishing industry divulged that, **since the mid 1990s, major publishers would not accept cookbooks unless they included canola in the recipes.** Did those publishers issue this demand because they were receiving money under the table from the Canadian rapeseed industry?

In 1997, Harper Collins engaged Dr. Artemis Simopoulos to write a cookbook, featuring the health benefits of omega-3 fatty acids. According to Jo Robinson, co-author of *The Omega Diet*, the amount of the advance was \$350,000. Dr. Simopoulos was a pediatrician who had served for nine years as chair of the *Nutritional Coordinating Committee* of the *National Institutes of Health* before becoming president of the *Center for Genetics, Nutrition, and Health*.

She had published several papers on omega-3 fatty acids, calling attention to their disappearance from the food supply, due to the industrialization of agriculture. Her most famous paper, published in 1992 in the *American Journal of Clinical Nutrition*, compared omega-3 levels in supermarket eggs from hens raised on corn with eggs from hens allowed to roam and eat a more varied diet (*A.P. Simopoulos and N. Salem, Jr., Egg Yolk as a Source of Long-Chain Polyunsaturated Fatty Acids in Infant Feeding. American Journal of Clinical Nutrition, 1992;55*). The more natural eggs contained twenty times more omega-3 than supermarket eggs.

Simopoulos's *The Omega Plan* came out in 1998 and was reissued as *The Omega Diet* in 1999. The book discusses the virtues of monounsaturated and omega-3 fatty acids in the Mediterranean diet (*A.P. Simopoulos and J. Robinson, The Omega Plan. Harper Collins Publishers, New York, NY, 1998*). Since unprocessed canola oil contains not only lots of monounsaturated fatty acids but also a significant amount of omega-3, it shows up in most of the book's recipes. Simopoulos claims that the Mediterranean diet is low in saturated fat and recommends lean meat and lowfat yogurt and milk as part of her regime.

The canola industry's approach was immensely successful: scientific conferences, promotion to upscale consumers through books (like *The Omega Diet*), and articles in the health section of newspapers and magazines. By the late 1990s, canola use had soared, not just in the U.S.

Today China, Japan, Europe, Mexico, Bangladesh, and Pakistan all buy significant amounts. Canola does well in arid environments such as Australia and the Canadian plains, where it has become a major cash crop. It is the oil of choice in gourmet and health-food markets, like Fresh Fields (Whole Foods) markets; and

it shows up in many supermarket items as well.

It is a commonly used oil in sterol-containing margarines and spreads recommended for cholesterol lowering. Use of hydrogenated canola oil for frying is increasing, especially in restaurants.

Let us compare ancient and modern processing methods: Rapeseed has been used as a source of oil since ancient times because it is easily extracted from the seed. In China and India, rapeseed oil was provided by thousands of peddlers operating small stone presses that press out the oil *at low temperatures*. What the merchant then sells to the housewife is *absolutely fresh*.

Modern oil processing is a different thing entirely. The oil is removed by a combination of high temperature mechanical pressing and solvent extraction. Traces of the solvent (usually *hexane*) remain in the oil, even after considerable refining.

Like all modern vegetable oils, canola oil goes through the process of caustic refining, bleaching, and degumming—all of which involve high temperatures or chemicals of questionable safety. And because canola oil is high in omega-3 fatty acids (which easily become rancid and foul-smelling when subjected to oxygen and high temperatures), it must be deodorized. The standard deodorization process removes a large portion of the omega-3 fatty acids by turning them into trans fatty acids. Remember that fact.

The trans fatty acid content of canola oil: Although the Canadian government lists the trans fat (trans fatty acid) content of canola at a minimal 0.2 per cent, research at the University of Florida, in Gainesville, found trans fat levels as high as 4.6 per cent in commercial liquid oil (S. O'Keefe and others, "Levels of Trans Geometrical Isomers of Essential Fatty Acids in Some Unhydrogenated U.S. Vegetable Oils," *Journal of Food Lipids*, 1994;1:165-176). The consumer does not know that trans fatty acids are in canola oil because they are not listed on the label.

A large portion of canola oil used in processed food has been hardened through the hydrogenation process, which also introduces levels of trans fatty acids into the final product—as high as 40 per cent (J.L. Sebedio and W.W. Christie, eds, *Trans Fatty Acids in Human Nutrition*, The Oily Press, Dundee, Scotland, 1998, pp. 49-50). In fact, canola oil hydrogenates beautifully, better than corn oil or soybean oil, because modern hydrogenation methods hydrogenate omega-3 fatty acids preferentially; and canola oil is very high in omega-3s. Higher levels of trans fat mean longer shelf life for processed foods, a crisper texture in cookies and crackers—and more dangers of chronic disease for the consumer (M.G. Enig, *Trans Fatty Acids in the Food Supply: A Comprehensive Report Covering 60 Years of Research*, 2nd Edition, Enig Associates, Inc., Silver Spring, MD, 1995).

Look closely at the ingredients list on peanut butter labels. The peanut oil has been removed and replaced with canola oil. Notice that you can turn the jar nearly upside down. It has been hardened into a grease.

As explained earlier, **canola is a genetically engineered plant developed in Canada from the rapeseed plant.** According to *AgriAlternatives*, The Online Innovation, and Technology Magazine for Farmers, "By nature, these rapeseed oils, which have long been used to produce oils for industrial purposes, are . . . toxic to humans and other animals."

Canola oil is genetically engineered rapeseed. Do you want to eat genetically engineered rapeseed?

Here is more about rapeseed: Derived from the *mustard family*, it is a toxic and poisonous weed which, when processed, becomes rancid very quickly.

Rapeseed oil is poisonous to living things and is an excellent insect repellent. You can use it (in very diluted form, following instructions) to kill the aphids on your roses and other plants. Available at your nursery, it works very well; it suffocates the aphids.

The industrial uses of rapeseed oil are well-known. It is used as an lubricant, fuel, soap, synthetic rubber base, and as an illuminant for color pages in magazines. It is an industrial oil, used to make varnish, and as an insecticide. It is not a food.

Rape oil is also the source of the infamous chemical-warfare agent, mustard gas, which was banned after blistering the lungs and skin of hundreds of thousands of soldiers and civilians during WW1. Recent French reports indicate that it was again used during the Gulf War.

Between 1950 and 1953, white mustard (rape) seed was irradiated in Sweden, to increase seed production and oil content. Irradiation is the process the experts want use to make our food "safe" to eat.

Here are health problems induced by rapeseed: Rape oil is strongly related to symptoms of emphysema, respiratory distress, anemia, constipation, irritability, and blindness in animals and humans. Rape oil was widely used in animal feeds in England and Europe between 1986 and 1991, when it was discontinued. It has been shown to cause lung cancer (*Wall Street Journal*, June 7, 1995).

Reports on the dangers of rapeseed oil are rampant on the internet. One is an article, "Blindness, Mad Cow Disease and Canola Oil," by John Thomas, which first appeared in *Perceptions* magazine, March/April 1996.

Hemagglutinins, substances that promote blood clotting and depress growth, are found in the protein portion of the seed; and traces are in rapeseed and canola oil.

The feeding of canola oil may make cattle more susceptible to several diseases (M. Purdey. *Educating Rita. Wise Traditions*, Spring 2002;3(1):11-18).

There are reports of allergies to canola. And internet

articles describe a variety of symptoms—including tremors, shaking, palsy, lack of coordination, slurred speech, memory problems, blurred vision, problems with urination, numbness and tingling in the extremities, and heart arrhythmias which cleared up on discontinuance of canola.

The canola industry is deeply disturbed about such reports; and so it arranges for the publication of articles to counteract them. In an article in the *Washington Post*, Robert L. Wolke declared that the publishers of these reports are spreading “hysterical urban legends about bizarre diseases.”

When you purchase food products, check them for ingredients. If the label says, “may contain the following” and lists canola oil as a possible ingredient, you know canola oil is in it—because it is the cheapest oil and the Canadian government subsidizes it to industries involved in food processing.

Nearly all processed foods now contain canola oil. Fortunately, fresh fruits and vegetables contain none.

More problems with canola oil: Bird breeders check labels to ensure that there is no rape seed in their food. They will tell you, “The birds will eat it, but they do not live very long.” One individual, who worked for only nine months as a quality control taster at an apple-chip factory where Canola oil was used exclusively for frying, developed numerous health problems.

Rape seed oil, used for stir-frying in China, was found to emit cancer-causing chemicals. “Rapeseed oil smoke causes lung cancer.”—*Wall Street Journal*, June 7, 1995.

Chemically, canola breaks down at 5% saturated fat, 57% oleic acid, 23% omega-6, and 10%–15% omega-3. The reason canola is particularly unsuited for consumption is because it contains a very-long-chain fatty acid, called erucic acid, which under some circumstances is associated with fibrotic heart lesions.

A key problem is that the omega-3 fatty acids of processed canola oil (the only good part before processing) are transformed during the deodorizing process into *trans fatty acids*—something very bad. As reported in *Acres USA*, March 2001 (one of the most respected agriculture journals in America), one study indicated that canola oil (which the industry calls “heart-healthy”) actually creates a deficiency of vitamin E, which, as many of us know, is essential to our cardiovascular health.

Because of its high sulphur content, canola oil goes rancid easily and baked goods used with the oil develop molds rather quickly.

It has been very much in vogue in health-food circles to praise canola oil as very healthy oil, “high in polyunsaturates,” while condemning tropical oils such as coconut or palm oil as being saturated and unhealthy.

“The high praise for canola is propaganda put forth by the Canadian government because ‘canola,’ a hybridized rape plant, is one of that nation’s chief export products.”—*Acres USA*, March 2001.

What high temperatures produce: All food-grade canola, including the varieties sold in health-food stores, are deodorized from its natural, terrible odor—by the use of 300 degree F. high-temperature refining. You cannot cook a vegetable oil at that temperature and leave behind anything that is very edible. Most of the omega-3s in canola oil are transformed into trans fats during that deodorization process.

Oils high in omega-3 are not capable of taking high temperatures. Heating canola distorts the fatty acid, turning it into an unnatural form of trans fatty acid that has been shown to be harmful to health.

Udo Erasmus, Ph.D., a highly regarded international expert on fats and oils, says the only safe oil to use to fry or bake with is water. All oils are damaged by very high temperatures. He says no fat can stand the temperatures used in food processing without being adversely affected.

A form of plastic: Research at the University of Florida, in Gainesville, determined that as much as 4.6% of all the fatty acids in canola are *trans isomers* (a type of plastic), due to the refining process. Contrary to popular opinion, saturated fats, especially those found in coconut oil are not harmful to health, but are important nutrition. There are no trans isomers in unrefined coconut butter, for example. Mary Enig, Ph.D., has published a number of research papers on this; she refutes all the establishment propaganda defending canola oil.

Still more canola horror stories: In 1996, the Japanese announced a study wherein a special canola oil diet had actually killed laboratory animals. Reacting to this unpublished, but verified and startling information, a duplicate study was conducted by Canadian scientists, using piglets and a canola oil-based milk-replacer diet.

In this second study, published in *Nutrition Research*, 1997, the researchers verified that canola oil somehow depleted the piglets of vitamin E to a dangerously low level.

Any “food” substance that depletes vitamin E rapidly is extremely dangerous. Vitamin E is absolutely essential to human health. It is critically necessary in the body when processed fats are eaten; because tocopherols control the lipid peroxidation that results in dangerous free-radical activity, which in turn causes lesions in arteries and other problems.

Canola oil now has been shown to be a very heavy abuser of tocopherols or vitamin E, with the potential for rapidly depleting a body of the important vitamin.

Canola Oil: the Hidden History

**PART TWO
OF TWO**

Continued from the preceding tract in this series

The researchers did not know what factors in the canola oil were responsible. They reported that other vegetable seed oils did not appear to cause the same problem in piglets.

Monsanto announced, in April 1997, that it was recalling an immense batch of genetically engineered canola seed because an unapproved gene slipped in by mistake. The canola seed had been genetically manipulated to resist the herbicide toxicity of *Roundup*, which is *Monsanto's* top money making product. The recall involved 60,000 bags containing two types of canola seed, which is enough to plant more than 700,000 acres. Both types of seed have the wrong gene in them. The genes in the recalled seed have not been approved for human consumption.

A spokesman for *Limagrain Canada Seeds*, which was selling the seeds under a *Monsanto* license, said that experts are trying to determine how the mistake occurred. "We may never know how this happened," he lamented.

The implications of this error are serious. No one in his right mind is unconcerned about genetic manipulations getting lost—and going wild in the fields.

On January 26, 1998, *Omega Nutrition*, one of the major producers of organic, cold-pressed oils for the health-food store market, published a press release. The release states that if you are cooking with canola oil of any quality, you might as well be using margarine. In the case of refined canola oil, the important health benefits have been processed away—leaving the consumer with the nutrition of, say, white flour, along with dangerous trans fatty acids which have replaced a lot of the beneficial omega-3 essential fatty acids.

(By the way, what is margarine? It is not a food. It is a manufactured grease concocted in a machine from various oils and chemicals. Then it is colored and molded to pose as butter. Its stiffness comes from being loaded with trans fatty acids. This butter substitute does not exist in nature. It cannot be grown or converted from a natural food as butter and cheese is. Most restaurants substitute it for butter without notice to you.)

More health problems: Loss of vision is a known characteristic side effect of rape oil which antagonizes the central and peripheral nervous systems, as processed soybean oil does, but worse. The deterioration takes years, however. Rape (canola) oil causes emphysema, respiratory distress, anemia, constipation, irritability, and blindness in animals and humans. Rape oil was widely used in animal feeds in England and Europe between 1986 and 1991, when it was thrown out. You may remember reading about the cows, pigs and sheep that went blind, lost their minds, attacked

people, and had to be shot.

Millions of people have suffered the loss of their vision from glaucoma, a disease involving atrophy (deterioration) of the optic nerve. For years, "experts" have been telling us that glaucoma results from fluid-pressure buildup in the eye that causes the optic nerve to deteriorate. This theory was based on an incorrect medical model: They were wrong!

More recently, the experts have admitted that this is not true and have given birth to a new theory. According to it, glaucoma is instead caused by a deficiency of oxygen and blood flow. These blood-corpusele clusters cannot squeeze through the extremely tiny capillaries in the posterior of the eye, so cannot deliver oxygen to the mitochondria. This is what the problem has been all along. Chemically doctored, cooked fat increases this problem. It can lead to retinitis and macular degeneration.

Death of the mitochondria in the cells in the posterior of the eye is due to oxygen starvation, sodium toxicity, and waste accumulation. When the mitochondria die, the cells die and the posterior eye tissues atrophy. In this respect, glaucoma has much in common with hair loss, Alzheimer's disease, multiple sclerosis, cerebral palsy, and hearing problems.

A woman in Chicago reported that she had been in England when the "Mad Cow Disease" had been at its peak. She said that she had seen a television news report that told people not to panic if they had been using rape oil in their diet and were over 65 years of age. The "experts" added that the effects of rape oil ingestion takes at least 10 years to manifest; and, in all likelihood, most of these people would be dead by then anyway.

But, in the official reports, the experts blamed the behavior on a viral disease called scrapie. However, when rape oil was removed from animal feed, the incidents of scrapie (the form of mad cow disease in sheep) was reduced.

Dangerous chemicals inside: Canola oil contains large amounts of *isothiocyanates*. These are cyanide-containing compounds. Cyanide inhibits mitochondrial production of *adenosine triphosphate* (ATP), which is the energy molecule that fuels the *mitochondria*. ATP energy powers the body and keeps us healthy and young!

Many substances can bind metabolic enzymes and block their activity in the body. In biochemistry, these substances are called inhibitors.

Toxic substances in canola and soybean oil encourage the formation of molecules with covalent bonds which are normally irreversible: They cannot be broken by the body once they have formed.

For example, consider the pesticide, *malathion*. It binds to the active site of the enzyme, *acetylcholinesterase*.

terase, and stops this enzyme from doing its job, which is to divide acetylcholine into choline and acetate.

Acetylcholine is critical to nerve-impulse transmission. When acetylcholinesterase is inhibited, as by pesticide residues, nerve fibers do not function normally and muscles do not respond. Partial paralysis gradually occurs. There has been a tremendous increase in disorders like systemic lupus, multiple sclerosis, cerebral palsy, pulmonary hypertension, and neuropathy.

Another group of chemicals in our modern, chemically modified food oils are the *organophosphates*. These are also used in insecticides, such as *malathion*.

Acetylcholinesterase inhibitors cause paralysis of the striated (skeletal) muscles and spasms of the respiratory system. That is why *malathion* is the pesticide of choice by the experts; it kills insects by paralysis—just as *rotenone* from soybeans does! It inhibits the insects' enzymes and those of humans, too!

Agents Orange and Blue, that were used in Vietnam to defoliate jungle cover, are also *organophosphorus* compounds. The Vietnam veterans and the Vietnamese people know about them firsthand. Government experts who okayed their use and chemical companies that manufactured them have finally admitted their toxic effects on people and the environment. Nonetheless, present-day experts in academia and government continue to claim that cheap junk food is relatively harmless.

Canola oil is also high in *glycosides* that cause serious problems by blocking enzyme function and depriving us of our life force. Glycosides interfere with the biochemistry of humans and animals. Their presence in rattlesnake venom inhibits muscle enzymes and cause immobilization of the victim.

These modern, chemically altered food oils—which include soybean oil, canola, and corn oil—also contain glycosides which depress the immune system, by causing the T cells to go into something akin to a stupor. These oils alter the bioelectric “terrain” and promote disease.

Then there is the connection between cancer and trans fatty acids. It has been known since 1949.

Nobel Prize winner, V. Euler of Stockholm, a cancer researcher, and his associates, wrote and published a book in 1949 in which they concluded that if the numerous and diverse symptoms associated with various types of cancer were reduced to one common denominator, it would be that “the fat lacks the ability to integrate in the living tissue.” “Trans fatty acid is the name of the fat that lacks this ability. It is bad fat.

The *alcohols* and *glycosides* in canola and soybean oil shut down our protective grid—the immune system. Fluoride, immunizations, antibiotics, and biojunk food play a similar role in immune system collapse. An *alcohol* is a chemistry term for the “reactive” chemical group on an organic molecule. Those “R” groups are what make organic compounds work—for

good and bad! Canola alcohols and glycosides are very reactive. They are as toxic as fermented alcohols, but their effects manifest differently. The damage takes years to show up.

Oil that cannot rot: “Nonspoiling,” “spreadable” oils are ruining the health of our people. Since 1902, Western countries have resorted to chemical process to destroy the “unsaturatedness” of vegetable oils. It is done to make them easier to handle, easier to market, and to preserve them, so they will not spoil so quickly. In the early 1900s, clever advertisements hailed its “spreadability,” exclaiming that this is what everyone had been waiting for: “a spreadable fat”! The plan was to destroy the essential elements of the fat, in order to prevent it from spoiling. But the result is the health of those eating those oils is being damaged as well. Avoid any vegetable oil that is labeled “*hydrogenated*” or “*partially hydrogenated*,” because it contains 100% trans fatty acid!

Food manufacturing is a big, profitable business and employs many highly skilled lobbyists. The new U.S. labeling laws do not list “*trans fatty acid*” as an ingredient in processed foods—because the large food manufacturers spent billions of dollars to pay for lobbyists to keep “trans fatty acid” off the labels.

Unfortunately, even the term, “*cold pressed*,” no longer means anything in the U.S. All commercial oils and nut butters sold in U.S. supermarkets contain trans fatty acid. This is because the U.S. government allows heat-treated, high-pressured, squeezed vegetable oil to be used—and even labeled as “cold processed.”

The Italian government has passed a law that olive oil must be protected from heat and high pressure. The U.S. government could save many lives if it passed a similar law about all vegetable oil—and banned cotton seed oil entirely. (Cotton is not a food plant; and its oil should never enter the human body.)

Using the new U.S. FDA food labels, here is how to figure the amount of trans fatty acid in packaged food:

First, find the amount of “*Total Fat*” on the label. Listed under it, slightly indented, are the amounts of “*Saturated Fat*,” “*Polyunsaturated Fat*,” and/or “*Mono-saturated Fat*.” Add those figures together. (If only two are listed, add them together or use one amount if only one is listed.)

Then subtract that total amount from the amount listed as “*Total Fat*.” The answer is the amount of trans fatty acid in that product.

Fats that can be safely heated: Butter and tropical fats (coconut, palm, palm kernel, cocoa, and shea nut) are the safest to put in heated food, because they contain only small quantities of essential fatty acids (EFAs). The saturated fatty acids contained in these fats/oils are inert and therefore heat stable. Heat does not destroy them in the same way it destroys EFAs. Butter and tropical fats are best used unhydrogenated. Only small amounts should be eaten, as they are sticky, hard, saturated fatty acid-containing fats.

1 Tropical oils got a bad reputation for increasing
2 cholesterol and triglyceride levels that supposedly cause
3 cardiovascular disease. An unconfirmed rumor sug-
4 gests that the soybean industry financed the success-
ful campaign against tropical fats, to kill imports and
increase soybean sales. Tropical oils used in their coun-
try of origin have been shown in several studies to de-
crease cholesterol levels. The difference in results may
be due to several causes: deterioration in tropical oils
during storage (oxidation, processing (hydrogenation),
differing experimental design, or a combination of the
above. Raw tropical oils are rich sources of vitamin E
and tocotrienols, which help protect arteries from dam-
age leading to cardiovascular disease (CVD). Olive oil
imported from Italy is safe for baking, but not for fry-
ing or deep frying. But only use imported Italian olive
oil, because it is cold processed by Italian law.

The metabolism of fat affects each and every or-
gan. Anyone with liver and gallbladder problems is
quite aware of how fats affect them. In medicine they
say “Eat less fat,” because it was observed that fats do
not agree with the sick person. However, if this person
with liver and gallbladder problems is given “good fat”
(*i.e.* live, highly unsaturated fat), *it will agree with him*
very well.

Butter and tropical fats—coconut, palm, palm ker-
nel, cocoa, and shea nut oil—are good. Better still is
wheat germ oil. The best oil is flaxseed oil. Here is the
ideal way to take flaxseed oil:

Order a bottle of *Barlean's Flaxseed Oil*. When it
arrives, place it in the freezer. When you want some
oil, defrost the bottle and pour some in a pint-sized
canning, glass jar. Put the Barlean's back in the freezer
and put the glass jar in the refrigerator. At mealtime,
take out the jar and, during the meal, pour a little into
a spoon and put it into your mouth along with some
food. Soon after, put the jar back in the refrigerator.

*In this way, you will be taking the very richest
source of Omega-3; this is an outstanding source of
fresh, polyunsaturated oil.*

Evening primrose oil capsules are also good, but
much more expensive and unnecessary if you have flax-
seed oil.

An alternative method is to daily grind fresh, raw
flaxseed and sprinkle that on your meal. But, of course,
your intake of flaxseed oil will be greatly reduced. Com-
bining the taking of ground flaxseed with flaxseed oil
is a good choice.

What are saturated fatty acids? They are chains
of carbon atoms that have *hydrogen* filling every bond.
In foods, they normally range in length from four to 22
carbons. Because of their straight configuration, satu-
rated fatty acids pack together easily and tend to be
solid at room temperature. Butter, tallow, suet, palm
oil, and coconut oil are classified as saturated fats be-
cause they contain a preponderance of saturated fatty
acids. Saturated fats are stable and do not become
rancid when subjected to heat, as in cooking.

Monounsaturated fatty acids are chains of car-
bon atoms that have one double bond between two
carbons *and therefore lack two hydrogens*. Normally
they range from 16 to 22 carbons. They have a kink or
bend at the position of the double bond; so the mol-
ecules do not pack together as easily as in saturated
fatty acids. Monounsaturated oils tend to be liquid at
room temperature but become solid when refrigerated.
Olive oil, peanut oil, lard, rapeseed, and canola oils
are classified as monounsaturated oils. The most com-
mon monounsaturated fatty acids are palmitoleic (16
carbons), oleic (18 carbons) and erucic (22 carbons).
Monounsaturated oils are relatively stable and can be
used for cooking.

Polyunsaturated fatty acids have two or more
double bonds. As there is a bend or kink at each double
bond, these fatty acids do not pack together easily and
tend to be liquid, even when cold. Polyunsaturated oils
are very fragile. They tend to develop harmful free radi-
cals when subjected to heat and oxygen, as in cooking
or processing. Soybean oil, safflower oil, sunflower oil
and flax oil are polyunsaturated oils. Omega-6 fatty
acids have the first double bond at the sixth carbon
from the end of the fatty acid chain. The most com-
mon omega-6 fatty acid is linoleic acid, which is called
an essential fatty acid (EFA) because your body cannot
make it.

Omega-3 fatty acids have the first double bond at
the third carbon. The most common omega-3 fatty acid
is the EFA alpha-linolenic acid. The consensus among
lipid experts is that the American diet is too high in
omega-6 fatty acids (present in high amounts in com-
mercial vegetable oils) and lacking in omega-3 fatty
acids (which are present in organ meats, wild fish,
pasteurized egg yolks, organic vegetables, and flaxseed
oil). A surfeit of omega-6 fatty acids and deficiency in
omega-3 fatty acids has been shown to depress im-
mune system function, contribute to weight gain, and
cause inflammation.

**SOYBEAN OIL VERSUS RAPESEED OIL IN IN-
DIA:** While canola oil is displacing soybean oil in many
American processed foods, soybean oil is displacing
traditional rapeseed oil in India. In her book, *Stolen
Harvest*, Indian author Dr. Vandana Shiva describes
how American industrially processed soybean oil re-
placed traditional seed oils in a large part of India.
Each region in India has its specific edible oil used for
cooking. In the North and East, it is rapeseed oil. In
the West, it is peanut oil. In the Deccan, it is sesame
seed oil. And, in Kerala, it is coconut. In India, rape-
seed or mustard oil was traditionally sold in small
quantities, extracted as needed with a small oil press
or *ghanis*. Oil processing provided employment for
thousands of artisans and ensured that the housewife
had a fresh product. Mustard oil also served as mos-
quito repellent and as a nonpolluting oil in lamps.

Within a few months after the advent of “free trade”

for soybean oil into India, thousands of Indians fell ill with “dropsy,” due to a mysterious adulteration of rapeseed oil. The government banned the sale of all unpackaged edible oils, thus ensuring an end to all household and community-level oil processing. Edible oil production became fully industrialized and local processing became a criminal act. Thousands of workers were dispossessed of their livelihood and millions of Indians were dispossessed of a healthy oil. Cheap, highly processed soybean oil immediately replaced rapeseed oil in the markets.

During the crisis, the U.S. Soybean Association pushed for soybean imports as the “solution.” One business publication reported: “U.S. farmers need big new export markets. India is a perfect match.” Growth was achieved by theft of an important part of the small-scale local economy.

CANOLA OIL STUDIES

Robert L. Wolke, in that *Washington Post* article, said, “I found no research studies indicating that today’s low-erucic-acid canola oil, as distinguished from ordinary rapeseed oil, is harmful to humans.” That is because, even though canola oil now has GRAS status, no long-term studies on humans have been done with low-erucic-acid canola oil.

Animal studies on low-erucic-acid rapeseed oil were performed when the oil was first developed and have continued to the present. The results challenge not only the health claims made for canola oil, but also the theoretical underpinnings of the diet-heart hypothesis.

The first published studies on the new oil were performed in 1978 at the Unilever research facility in the Netherlands (*R.O. Vles and others, “Nutritional Evaluation of Low-Erucic-Acid Rapeseed Oils,” Toxicological Aspects of Food Safety, Archives of Toxicology, Supplement 1, 1978:23-32*). The industry was naturally interested to know whether the new LEAR (low-erucic) oil caused heart lesions in test animals. In earlier studies, animals fed high-erucic-acid rapeseed oil showed growth retardation and undesirable changes in various organs, especially the heart—a discovery that touched off the so-called “erucic acid crisis” and spurred plant geneticists to develop new versions of the seed.

But the results of the LEAR study were mixed. **Rats genetically selected to be prone to heart lesions developed more lesions on the LEAR oil** than those on olive oil or sunflower oil.

In 1997, researchers at the Canadian Institute for Food Science and Technology examined LEAR oils. They found that **piglets fed milk replacement containing canola oil showed signs of vitamin E deficiency**, even though the milk replacement contained

adequate amounts of vitamin E (*F.D. Sauer and others, “Additional Vitamin E Required in Milk-Replacer Diets that Contain Canola Oil,” Nutrition Research, 1997;17(2):259-269*). Piglets fed soybean oil based milk replacement, fortified with the same amount of vitamin E, did not show an increased requirement for vitamin E.

Vitamin E protects cell membranes against free-radical damage and is vital to a healthy cardiovascular system. In a 1998 paper, the same research group reported that **piglets fed canola oil suffered from a decrease in platelet count and an increase in platelet size** (*J.K. Kramer and others, “Hematological and Lipid Changes in Newborn Piglets Fed Milk-Replacer Diets Containing Erucic Acid,” Lipids, January 1998;33(1):1-10*). **Bleeding time was longer in piglets fed either canola oil or rapeseed oil.** These changes were mitigated by the addition of saturated fatty acids from either cocoa butter or coconut oil to the piglets’ diet. These results were confirmed in another study a year later. **Canola oil was found to suppress the normal developmental increase in platelet count** (*S.M. Iunis and R.A. Dyer, “Dietary Canola Oil Alters Hematological Indices and Blood Lipids in Neonatal Piglets Fed Formula,” Journal of Nutrition, July 1999; 129 (7):1261-8*).

Finally, studies carried out at the Health Research and Toxicology Research Divisions in Ottawa, Canada, discovered that **rats bred to have high blood pressure and proneness to stroke had shortened life spans when fed canola oil as the sole source of fat** (*W.M.N. Ratnayake and others, “Influence of Sources of Dietary Oils on the Life Span of Stroke-Prone Spontaneously Hypertensive Rats,” Lipids, 2000;35(4): 409-420*). The results of a later study suggested that the culprit was the sterol compounds in the oil, which “make the cell membrane more rigid” and contribute to the shortened life span of the animals (*M.N. Wallsundera and others, “Vegetable Oils High in Phytosterols Make Erythrocytes Less Deformable and Shorten the Life Span of Stroke-Prone Spontaneously Hypertensive Rats,” Journal of the American Society for Nutritional Sciences, May 2000;130(5):1166-78*).

These studies all point in the same direction: that **canola oil is definitely not healthy for the cardiovascular system. Like rapeseed oil, its predecessor, canola oil is associated with fibrotic lesions of the heart. It also causes vitamin E deficiency, undesirable changes in the blood platelets, and shortened life span in stroke-prone rats when it was the only oil in the animals’ diet. Furthermore, it seems to retard growth**, which is why **the FDA does not allow the use of canola oil in infant formula** (*Federal Register, 1985*).
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