



Quelling urban legends - The truth about canola oil

Occasionally there arises a controversy that demands the attention of the natural medical community. The infamous 'Canola E-Mail' that circulated recently is one such issue.

In an article published in the March/April 1996 issue of the health magazine *Perceptions* entitled 'Blindness, Mad Cow Disease and Canola Oil', excerpts from John Thomas' book, *Young Again: How To Reverse the Aging Process* (first published in 1994) leveled an attack against canola oil with a vengeance. Whether driven by malice, superstition or just poor science, this article has appeared in some form or another in e-mails circulating for the last 10 years, reappearing every 18 months or so and wreaking havoc with doctors and patients alike. While the internet is unquestionably a tremendous medium for the dissemination of information, it has also become the greatest contemporary source of misinformation. In order to address the concerns raised by this e-mail, below is the complete text of just one of the many versions that regularly circulate.

BEWARE !!! YOU HAVE PROBABLY SEEN SOME VERSION OF THE E-MAIL BELOW. AFTER THOROUGHLY RESEARCHING THE FACTS, WE ARE CONVINCED THAT IT BELONGS COMFORTABLY IN THE GENRE OF 'URBAN LEGEND.'

RAPE IN A DIFFERENT GUISE

Recently I bought a cooking oil that's new to our supermarkets, Canola Oil. I tried it because the label assured me it was lowest in "bad" fats. However, when I had used half the bottle, I concluded that the label told me surprisingly little else and I started to wonder: where does canola oil come from? Olive oil comes from olives, peanut oil from peanuts,

sunflower oil from sunflowers; but what is a canola? There was nothing on the label to enlighten me, which I thought odd. So, I did some investigating on the Internet.

There are plenty of official Canola sites lauding this new "wonder" oil with all its low-fat health benefits. It takes a little longer to find sites that tell the less palatable details. Here are just a few facts everyone should know before buying anything containing canola. Canola is not the name of a natural plant but a made-up word, from the words "Canada" and "oil". Canola is a genetically engineered plant developed in Canada from the Rapeseed Plant, which is part of the mustard family of plants. 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". (This, by the way, is one of the websites singing the praises of the new canola industry.)

Rapeseed oil is poisonous to living things and is an excellent insect repellent. I have been using it (in very diluted form, as per instructions) to kill the aphids on my roses for the last two years. It works very well; it suffocates them. Ask for it at your nursery.

Rape is oil used as a lubricant, fuel, soap and synthetic rubber base and as an illuminate for color pages in magazines. It is industrial oil. It is not a food. Rape oil, it seems, 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. Remember the "Mad Cow disease" scare, when millions of cattle in the UK were slaughtered in case of infecting humans? Cattle were being fed on a mixture containing material from

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dead sheep, and sheep suffer from a disease called "scrapie". It was thought this was how "Mad Cow" began and started to infiltrate the human chain. What is interesting is that when rape oil was removed from animal feed, 'scrapie' disappeared. We also haven't seen any further reports of "Mad Cow" since rape oil was removed from the feed. Perhaps not scientifically proven, but interesting all the same. US and Canadian farmers grow genetically engineered rapeseed and manufacturers use its oil (canola) in thousands of processed foods, with the blessings of Canadian and US government watchdog agencies. Except canola means "Canadian oil"; and the plant is still a rape plant, albeit genetically modified. The new name provides perfect cover for commercial interests wanting to make millions. Look at the ingredients list on labels.

Apparently peanut oil is being replaced with rape oil. You'll find it in an alarming number of processed foods. There's more, but to conclude: rape oil was the source of the chemical warfare agent mustard gas, which was banned after blistering the lungs and skins of hundred of thousands of soldiers and civilians during WWI. Recent French reports indicate that it was again in use during the Gulf War.

If a label says, "may contain canola oil," you know it does because it is the cheapest oil available, and Canadian special interest groups subsidize users.

Here is more information....

The Canadian government and industry paid our Federal FDA \$ 50 million to have canola oil placed on the GRAS (Generally Recognized As Safe) list. Thus a new industry was created. Laws were enacted affecting international trade, commerce, and traditional diets. Studies with lab animals were disastrous. Rats developed fatty degeneration of heart, kidney, adrenals, and thyroid gland. When canola oil was withdrawn from their diets, the deposits dissolved but scar tissue remained on all vital organs. No studies on humans were made before money was spent to promote Canola oil in the USA.

ALD (Adrenoleukodystrophy) is a rare, fatal degenerative disease caused by a build up long-chain fatty acids (c22 to c28) which destroys the myelin sheath of the nerves. Canola oil is a very long chain fatty acid oil (c22). Those who will defend canola oil say that the Chinese and Indians have used it for centuries with no effect, however it was unrefined.

My cholesterol level was 150. After a year using Canola oil I tested 260. I switched back to pure olive oil and it has taken 5 years to get it down to 160. My sister once spilled Canola oil on a piece

of fabric, after five pre-treatings and harsh washings, the oil spot still showed. She stopped using Canola oil, wondering what it did to our insides if it could not be removed from cloth easily. Our Father bred birds, always checking labels to insure there was no rapeseed in their food. He said, "The birds will eat it, but they do not live very long". A friend, who worked for only 9 mos. as a quality control taster at an apple-chip factory where Canola oil was used exclusively for frying, developed numerous health problems. These included loose teeth & gum disease; numb hands and feet; swollen arms and legs upon rising in the morning; extreme joint pain especially in hands, cloudy vision, constipation with stools like black marbles, hearing loss; skin tears from being bumped; lack of energy; hair loss and heart pains. It has been five years since she has worked there and still has some joint pain, gum disease, and numbness. A fellow worker, about 30 years old, who ate very little product, had a routine check up and found that his blood vessels were like those of an 80 year old man. Two employees fed the waste product to baby calves and their hair fell out. After removing the fried apple chips from the diet their hair grew back in. My daughter and her girls were telling jokes. Stephanie hit her mom's arm with the back of a butter knife in a gesture, "Oh mom," not hard enough to hurt. My daughter's arm split open like it was rotten. She called me to ask what could have caused it. I said, "I'll bet anything that you are using Canola oil". Sure enough, there was a big gallon jug in the pantry. Rapeseed oil is a penetrating oil, to be used in light industry, not for human consumption. It contains a toxic substance. Even after the processing to reduce the erucic acid content, it is still penetrating oil. We have found that it turns rancid very fast. Also it leaves a residual rancid odor on clothing. Rapeseed oil smoke causes lung cancer. The Wall Street Journal June 7, 1995 pB6(W) pB6 (E) col 1 (11 col in)....continued ad nauseam.

Lets examine some of the more outrageous and irresponsible claims made by this 'Urban Legend' e-mail.

CLAIM: "Rapeseed oil is poisonous to living things. . . and toxic to human beings"

TRUTH: Although Asian and European people have used rapeseed for centuries, the erucic acid contained in unrefined rapeseed oil has been linked to lung cancer when high cooking temperatures are used, as in wok cooking, which traditionally uses temperatures between 240-280F (116-138° C). Heart lesions

have also been associated with the high erucic acid content of rapeseed (40-50%). These are all reasons rapeseed was never used in the US prior to 1974. The potential health hazards of the erucic acid were eliminated with the introduction of the low erucic acid variety called canola oil (0.5-1.5% erucic acid content).

CLAIM: "Rape seed causes emphysema, respiratory distress, anemia, constipation, irritability and blindness in animals and humans."

TRUTH: This seems to be an outright lie. There is no indication in the Merck Index, Medline, Pubmed or the CDC databases regarding any known or suspected link to any of these conditions. There always exists the possibility of allergic hypersensitivity, but the same is true for any food (e shellfish, peanuts, garlic, etc).

CLAIM: "We haven't seen any further reports of 'Mad Cow' since rape oil was removed from the feed."

TRUTH: This directly implies that Bovine Spongiform Encephalopathy (BSE) is caused by or linked to rape oil. A quick check of credible science references demonstrates conclusively that mad cow disease is directly linked to a rogue protein fragment called a prion (not a virus, bacteria or an oil), and has nothing to do with rapeseed oil. Also noted was the fact that it was rapeseed meal, not the oil, that was used, and it is in fact still used as feed throughout Europe.

CLAIM: "Rape . . . is an industrial oil."

TRUTH: True. Many oils, even corn and soybean, have multiple uses in commercial industry. For example, flax oil is used as industrial oil for paint and linoleum. Olive oil has been used to make soap for centuries. One of the most edible of oils, coconut oil, is used for many industrial products, including soaps and cosmetics.

CLAIM: "The Canadian government and industry paid our Federal FDA \$ 50 million dollars to have canola oil placed on the GRAS (Generally Recognized As Safe) list."

TRUTH: This is another ludicrous statement that belongs in the category of conspiracy theory. There is absolutely no evidence of this, which, according to conspiracy theorists, is good evidence that the government is hiding it. Sorry to be so light-hearted about this, but it is easy to make claims that can't be proven, and in so doing, introduce an element of irrational doubt to the use of a safe, healthy product.

CLAIM: "Rapeseed oil . . . is an excellent insect repellent."

TRUTH: It is not used as an insect repellent, but it does suffocate insects in a garden setting (just as any oil would suffocate any living thing – this is not due to toxicity, but the properties of any oil).

CLAIM: *“Rape oil was the source of the chemical warfare agent mustard gas, which was banned after blistering the lungs and skins of hundreds of thousands of soldiers during WWI.”*

TRUTH: This is an example of more alarmist propaganda based on outright lies. Rumors continue to circulate that rape oil is the source of the chemical warfare agent ‘mustard gas,’ so canola must be somehow related to it. The confusion results from rapeseed and canola being members of the Brassica family – also commonly referred to as the *mustard* plant family. The truth is, mustard gas, which is chemically 2,2'-dichlorodiethyl sulfide, is made by treating ethylene with sulfur chloride – it doesn't even come from a mustard plant. It was given the nickname ‘mustard gas’ because of its yellow color and sulphur odor. These rumors are totally unfounded; there is absolutely no relation between canola oil, and rapeseed oil and mustard gas.

CLAIM: *“Studies with lab animals were disastrous.”*

TRUTH: True. The same results were obtained in similar studies conducted with sunflower seed oil. Any study in which the subject's diet is changed from their normal diet (grains, fruits & vegetables in these cases) to a high fat diet is going to result in deteriorating health – this has nothing to do with the canola oil, it has to do with the excess fat content in general. The same thing happens to human beings if their diet suddenly consists of fatty fast foods and snacks – the health consequences are always less than favorable.

CLAIM: *“Adrenoleukodystrophy (ALD) is a rare fatal degenerative disease caused by a build up long-chain fatty acids (c22 to c28) which destroys the myelin (protective sheath) of the nerves. Canola oil is a very long chain fatty acid oil (c22).”*

TRUTH: This implication is a blatant misquote of the intent of Dr. Udo Erasmus in his book, *Fats that Heal, Fats that Kill*. Quoting from page 117: ‘In fact, erucic acid may have some beneficial effects. In recent years, a preparation of 20% erucic and 80% oleic acids, called *Lorenzo's Oil* after the boy whose condition inspired its development, has been used to treat a rare, fatal degenerative genetic condition known as Adrenoleukodystrophy (ALD), in which a

buildup of very long-chain fatty acids (C22 to C28) destroys the white matter (myelin) in the brain. Erucic acid helps to normalize the levels of these fatty acids....” It wasn't Dr. Erasmus' intent to recommend canola oil, but it certainly wasn't his intent to malign it or implicate it in disease either. How easy it is to mislead if the general public isn't willing to do their homework.

The remainder of the e-mail is a collection of anecdotes and personal observations that are unsubstantiated and impossible to verify. Ah, the stuff that good urban legends are made of. Stories come from second party accounts of “my sister, my father, my friend, my daughter, fellow employees, mom.” These claims are hard to argue with, but hardly form the basis for any kind of credible science. As healthcare professionals, it is our responsibility to research the facts – we encourage everyone to do their own research, and we are confident that you will draw the same conclusions that we have.

A worthwhile caveat: the conclusions in this article are based on current science. It is possible that, in 20 years, science will discover that canola oil is responsible for communism, whales beaching themselves, Donny and Marie Osmond's divorce and the depletion of the ozone layer – but until that point, we are left to evaluate the facts based on what current science can tell us.

FAQS ABOUT CANOLA OIL

What is Canola Oil?

Canola is a specially bred variety of rapeseed, and a member of the Brassica family. Other members of this family include turnips, broccoli, brussels sprouts, cabbage, kale and mustard greens.

Where Does It Come From?

In the late 1970s, Canola was bred from rapeseed via traditional pedigree hybrid propagation methods (no, it wasn't a gene-splicing process, i.e. GMO or genetically modified organism). Since most Canola is grown in Canada, the name is an acronym: CANOLA = ‘CANadian Oil Low Acid.’ Canola oil is also called LEAR oil, for ‘Low Erucic Acid Rapeseed.’

What About Erucic Acid?

Rapeseed oil originally contained a fat called erucic acid (a 22-carbon fatty acid present in all Brassica family members), which constituted 40-50% of the fatty acid content. These high levels of erucic acid in the original rapeseed were a potential health hazard. The new canola variety is much lower in erucic acid

(under 2%). This is not the only case of a dangerous substance having to be removed from a food to make it safe. Before cashew nuts are roasted, they contain a dermatotoxin. And cassava, a staple of the Central and South American diet, is full of hydrogen cyanide before it is soaked or heated.

Does Canola Oil Reduce Cholesterol?

Studies in Canada, Finland, Sweden and the US have found canola oil is as effective as sunflower, soybean and safflower oil in reducing total and LDL cholesterol levels in both subjects with normal blood lipid levels as well as hyperlipidemic subjects.

Does Mediral Use Canola Oil?

Yes. In light of the evidence, Mediral believes that Canola oil is a safe, healthy food and we confidently include it in Mediral's Thyroid Complex and Fatty Acid Complex.

Is Canola Oil Healthy?

Canola oil's fatty acid profile makes it especially beneficial for heart health. You probably remember that there are three types of fats: saturated, monounsaturated, and polyunsaturated. Two of the three types of fats are ‘healthy’ fats, saturated fats are the bad type you want to avoid. Canola oil is very low in saturated fatty acids, 6-7% (peanut oil is 18%, and palm oil can be as high as 79% saturated fat content), relatively high in monounsaturated fatty acids (61% oleic acid) and intermediate in polyunsaturated fatty acids. Omega-3 fatty acids, polyunsaturated fats, are reputed to lower cholesterol and triglycerides, and also contribute to brain growth and development. The relatively high levels of omega-3 fatty acids may actually stimulate the immune system. Canola oil's unique ratio of almost 2 to 1 Omega-6 to Omega-3 makes it the richest vegetable oil source of essential fatty acids. (corn oil is approximately 55 to 1 Omega-6 to Omega-3.) Canola does not contain significant amounts of trans fatty acids. Despite the claims in the accompanying e-mail, an extensive search of Medline reveals that there are no research studies linking Canola to human health hazards when consumed as recommended.

Is Canola Related to Mustard Gas?

Emphatically NOT! Rumors continue to circulate that rape oil is the source of the chemical warfare agent ‘mustard gas,’ so Canola must be somehow related to it. The confusion results from rapeseed and Canola being members of the Brassica family – also commonly referred to as the *mustard* plant family. The truth is, mustard gas, which is chemically

2,2'-dichlorodiethyl sulfide, is made by treating ethylene with sulfur chloride. It was given the nickname 'mustard gas' because of its yellow color and sulphur odor. These rumors are totally unfounded and there is no relation at all between Canola or rapeseed and mustard gas.

ESSENTIAL TERMS FOR UNDERSTANDING FATS

Alpha-Linolenic Acid – An omega-3 found in canola, soy, walnuts and flaxseed that our bodies can convert to EPA and DHA.

Bad Fats – Saturated fats and trans fatty acids are considered bad fats because of their link to elevated cholesterol and coronary risk.

Cholesterol – A waxy, fat-like compound belonging to a class of molecules called steroids. Cholesterol is necessary for the formation and maintenance of cell membranes, and the manufacture of hormones, bile salts and vitamin D. The body makes some cholesterol, the rest comes from dietary animal products such as red meat, poultry eggs and milk products. Desirable levels should be below 200 mg/dL. Dietary cholesterol isn't technically a fat, but it's found in food derived from animal sources. Intake of dietary cholesterol increases blood cholesterol levels, but not as much as saturated and trans fats, and not to the same degree in all people.

DHA – An omega-3 EFA, docosahexaenoic acid, a key fish fat. Derives from alpha-linolenic acid.

EPA – An omega-3 EFA, eicosapentaenoic acid, a key fish fat. Derives from alpha-linolenic acid.

Essential Fatty Acids (EFAs) – There are two groups of polyunsaturated fats that your body cannot make: omega-3s and omega-6s. Because of this, you need a dietary source for optimal wellness, and are thus considered 'essential'.

Gamma linolenic acid (GLA) – An omega-6 fatty acid that the body converts to a hormone-like substance called prostaglandin E1 (PGE1), may possess anti-inflammatory properties.

Good Fats – Monounsaturated fats and some polyunsaturated fats are considered the 'good fats'.

HDL – Known as 'good' cholesterol, this carrier molecule actually carries cholesterol away from the arteries and delivers it to the liver for processing and

excretion out of the body. Levels should be above 45 mg/dL.

LDL – Known as 'bad' cholesterol, too much of this carrier molecule can contribute to atherosclerosis and increase the risk of heart attack and stroke. Levels should be below 130 mg/dL

Linoleic Acid – A common omega-6 EFA.

Lipoproteins – Cholesterol doesn't dissolve in the blood, so it needs a carrier molecule. There are three main kinds – LDLs (low-density lipoproteins – these are the bad ones), HDLs (high-density lipoproteins – these are the good ones), and VLDLs (very low-density lipoproteins – these convert to LDLs).

Monounsaturated Fats – Considered a good fat that can help lower blood cholesterol. These generally remain liquid at room temperature but may solidify in the refrigerator. Monounsaturated fats may help reverse the heart-blocking effects of saturated fats. Foods high in monounsaturated fat include olive, peanut and canola oils. Avocados and most nuts also have high amounts of monounsaturated fat.

Omega-3s – A class of EFAs, polyunsaturated fatty acids, they are generally heart-friendly and anti-inflammatory. Omega-3s appear to decrease the risk of coronary artery disease, and may also protect against irregular heartbeats and help lower blood pressure levels. Alpha-linolenic acid is a common omega-3 fat. Others that fall into this category include EPA and DHA. Common sources include flaxseeds, flax oil, pumpkin seeds, walnuts, salmon, mackerel, herring, trout and tuna. Small amounts are also found in soybean and canola oil.

Omega-6s – A class of EFAs, polyunsaturated fatty acids. Linoleic acid (LA) is a common omega-6 fat. Others that fall into this category include arachidonic acid (AA), gamma linolenic acid (GLA) and dihomogamma linolenic acid (DGLA). Common sources for these include corn oil, sunflower oil and soybean oil.

Polyunsaturated Fats – The 'in between' fats that have some good and some bad properties. These are usually liquids at room temperature and in the refrigerator. Good sources include vegetable oils, such as safflower, corn, sunflower, soy and cottonseed oils. Polyunsaturated fats, composed of Omega-3 and Omega-6 fatty acids, have also demonstrated some cholesterol-lowering properties.

Ratio LDL to HDL – This ratio should be below 3.

Ratio Omega-6 to Omega-3s – Each EFA is necessary, but Americans do not get nearly enough omega-3. Currently Americans consume a ratio of 20+ to 1 omega-6 to omega-3 fats. It is recommended that we reduce the omega-6s and increase our omega-3s. A healthy omega 6 to omega 3 ratio (n-6 to n-3) ratio should be less than 5 to 1, and ideally closer to 2.5 to 1 (depending on which expert you listen to). A note of caution, according to the FDA, getting more than a total combined 3 grams of EPA and DHA/day may raise the risk of hemorrhagic stroke.

Ratio Total Cholesterol to HDL – This ratio should be below 4.5.

Saturated Fats – These are the bad fats which raise LDL (bad) cholesterol and HDL (good) cholesterol, and studies indicated that they may be linked to heart disease. Saturated fats more often come from animal sources (red meat, poultry, butter, milk), but may also be found in plants (coconut, palm and tropical oils). Oils with a high saturated content are generally solid or waxy at room temperature.

Trans Fats – Also referred to as trans-fatty acids, trans fat comes from adding hydrogen to vegetable oil through a process called hydrogenation. This makes the fat more solid at room temperature and less likely to turn rancid, but they also raise LDL (bad) cholesterol and lower HDL (good, protective) cholesterol and thus may be linked to heart disease. Hydrogenated fat is a common ingredient in commercial baked goods – such as crackers, cookies and cakes – and in fried foods such as doughnuts and french fries. Shortenings and some margarines also are high in trans fat. Look for the words *partially hydrogenated* in the list of ingredients to see if the product has trans fat. Some food labels state if the product has no trans-fatty acids. By January 01, 2006, food manufacturers are required to list trans fat content on nutrition labels. These are best avoided.

Triglycerides – Calories from fats, carbohydrates, etc that are ingested but not used are converted to triglycerides and transported to fat cells to be stored for use later. Elevated levels have been linked to numerous conditions. Fasting levels should be below 150 mg/dL.

Vitamin F – The EFAs linoleic, linolenic and arachidonic acid are collectively referred to as Vitamin F.