Health benefits of canola oil

By the Food Advisory Consumer Service (FoodFacts)



The canola plant was developed from the rapeseed plant by means of traditional breeding techniques. The name 'canola' is derived from 'Canadian oil' and the new oilseed was selected mainly for its low erucic acid and low glucosinolate composition.

Canola and its products were thoroughly investigated before it was released for commercial use and today canola is produced in many countries (*www.canola-council.org*). The USFDA (United States Food and Drug Administration) has accredited canola oil GRASS (generally accepted as safe) status. It is suitable for human consumption and is included as one of the edible oils by the American Oil Chemists Society (*Food Fats and Oils, AOCS Resource Directory, 9th edition, 2006*). Canola oil and oilcake have been used in Canada since the late 1970s and is now a household name in Europe, the United States and Australia.

Canola oil has seen the biggest increase in production over other vegetable oils over the past number of years and is now ranked number three in world production with around 67 million metric tons per annum.

At present, canola oil is of lesser importance than other household oils to the South African consumer. However, the situation is changing – local production increased to 100 000 tons per annum in 2014.

The following trends are predicted:

- Increased local production of canola to significant levels.
- Greater consumer demand for vegetable oil due to rising living standards.
- Consumer demands for healthier oils.

The myths about canola oil

Canola oil, like many other food products, is exposed to myths and misinformation. Unfortunately, this discreditation of canola oil is to the detriment of a very good food product. The purpose of this information article is to put canola oil into perspective.

Rebuttal of myths

There is strong scientific evidence that omega-3 fatty acids (alpha linolenic acid) can assist in preventing certain cancers. Canola oil is one of a few vegetable oils which is a good source of omega-3 fatty acids.

Dr Carl Albrecht, retired head of research of the South African Cancer Association (CANSA), was one of the internationally renowned scientists concerned about the negativity surrounding canola oil. He therefore did an extensive and detailed literature survey to determine whether the negativity was justified (*Canola oil – good or bad, C Albrecht, CANSA Report, 2002*).

He referred to several creditable information sources and the following is a summary of his survey and rebuttals:

- Canola oil is from a special variety of rape which is not chemically identical to the common rape plant.
- Rapeseed is not a poisonous weed.
- Canola oil is not an industrial oil but does have industrial applications as a lubricant.
- Canola oil does not form latex-like substances that agglutinate red blood corpuscles. Actually, the opposite could be true.
- Canola oil does not have any adverse effect on vision or the peripheral nervous system.
- Canola oil is not a source of mustard gas (the confusion with rapeseed is because it belongs to the mustard family, *Brassicaceae*).
- There is no evidence that canola glycosides depress the immune system.
- There are no free alcohols in canola oil.

The Canola Council of Canada also responded to each of the negative claims by means of scientific reports and facts.

A further example of the international recognition of canola is the contents of the book *Canola and Rapeseed – Production, Chemistry, Nutrition and Processing Technology*, edited by Fereidoon Shahidi, and with 28 international contributors.

Nutritional value of canola oil

The theory on the nutritional value of polyunsaturated fatty acids changed dramatically during the past decade. In

2011 the Global Omega-3 Summit: A Koyoto-type approach was held in Bruges and participants discussed the role of long-chain omega-3 fatty acids in health and mental health.

AP Simopoulos discussed the importance of the correct omega-6 to omega-3 fatty acid ratio in cardiovascular disease and other chronic diseases (*Experimental Biology and Medicine, 2008, 233, 674-688*). Prof B Lands provided a review on the latest information on the metabolism of unsaturated fatty acids, and the formation of highly unsaturated C20 and C22 fatty acids and their hormonal effect on the body (*INFORM, July 2010*). As early as 1996 the American Heart Association warned that consumption of high intakes of omega-6 fatty acids increase the risk of gallstones and may promote cancer (*Circulation, 1996, 94, 1795-1800*).

The Nutrition Society of South Africa arranged a debate on the nutritional value and future trends in vegetable oils. The omega-6 to omega-3 ratio of canola and sunflower oils were discussed and shown that canola oil with its ratio of 2,1 has the ideal combination of polyunsaturated and mono-unsaturated fatty acids. It was stressed that the omega-3 fatty acid in canola is linolenic acid, a carbon 18 fatty acid, with different physiological properties than fish oil with its carbon 20 and 22 polyunsaturated fatty acids.

Prof M Smuts elaborated on the intake of the different polyunsaturated plant oils and showed that the intake of oleic acid can be seen as neutral since it does not affect the omega-6 to 3 ratio (*SA Graan, April 2011, 13-15*). The fact that canola oil contains 60% oleic acid is also a nutritional advantage. It can claim to provide a healthy omega-6 to 3 and high oleic acid composition, which is the reason why the SA Cancer Association supports canola oil.

Canola oil is also a source of plant sterols, brassicasterol, campesterol and beta-sitosterol, as well as alpha- and gamma-tocopherol.

Canola versus palm

During the past few years, palm olein (the softer fraction of palm oil) has been promoted by certain scientists. This was primarily based on oil stability, the absence of trans fatty acids and the nutritional properties of tocotrienols (minor components).

In South Africa there has been a dramatic increase in the use of palm olein for industrial purposes. The promotion of palm olein created more confusion than education. It was therefore decided to compare the properties of canola versus palm (*Table 1*). The figures are averages. Fatty acid composition can vary and can be influenced by cultivar, location and weather patterns.

Table 1 indicates that canola is a richer source of the essential fatty acids, linoleic and alpha linolenic acid. Palm olein, on the other hand, contains around ten times more palmitic acid than canola oil. This is important because palmitic acid is one of the saturated fatty acids that increase LDL cholesterol (bad cholesterol) (*Food Fats and Oils, AOCS Resource Directory 2006*). Canola oil is clearly the more unsaturated of the two oils and therefore healthier.

Regarding the minor components it is clear that the tocopherol content of canola oil is higher than that of palm olein. The tocopherols have vitamin E activity, and it suggests that canola will be a better source of vitamin E. *Table 1* shows that palm olein is a valuable source of tocotrienols.

Table 1: Canola oil versus palm olein (oil).

	Palm olein	Canola oil
Major components		
Ambient temperature	Semi-solid	Liquid
Palmitic (C16:0)	39	4
Oleic (C18:1)	43	60
Stearic (C18:0)	4	1,5
Linoleic (C18:2)	11	20
Alpha-linolenic	0,2	11
Trans fatty acids	<1,5	<1,5
Saturated fatty acids	high (45 to 50)	low (<6)
Minor components		
Tocopherols	240 ppm	692 ppm
Tocotrienols	560 ppm	
Sterols	2 250 ppm	B050 ppm
Cholesterol	16 ppm	53 ppm

Canola is generally considered the only vegetable oil, when evaluated against recognised nutritional standards, that is nutritionally well balanced.

From *Table 1* it is clear that, nutritionally speaking, canola is the better oil. It will also be the choice of the consumer because it is a liquid at ambient temperatures whereas palm olein is not. Canola oil can be mechanically expelled without solvent extraction and possible chemical residues in the oil and oilcake. Palm oil is also isolated without solvent extraction.

Canola oil is recommended for household and industrial use while palm olein can find application in industrial frying operations because of superior stability at frying temperatures. It is not pourable (it has to be spooned out of its container) which makes it a cumbersome operation in the kitchen.

Plant breeders have, and are continuously developing, canola oil with a higher oleic acid composition which will make it more stable and suitable for industrial operations.

Nutritional properties of oil

- Low in saturated fat (less than 6%).
- High in linoleic acid (omega-6), an essential fatty acid.
- High in alpha-linolenic acid (omega-3).
- Can be a good defence against coronary heart disease (high sterol content).

Canola oil will have a beneficial nutritional and health advantage when incorporated into the daily diet. Its major advantage is its high alpha-linolenic acid (omega-3) content which can supplement the generally low consumption of omega-3.

For more information, visit *www.foodfacts.org.za.*