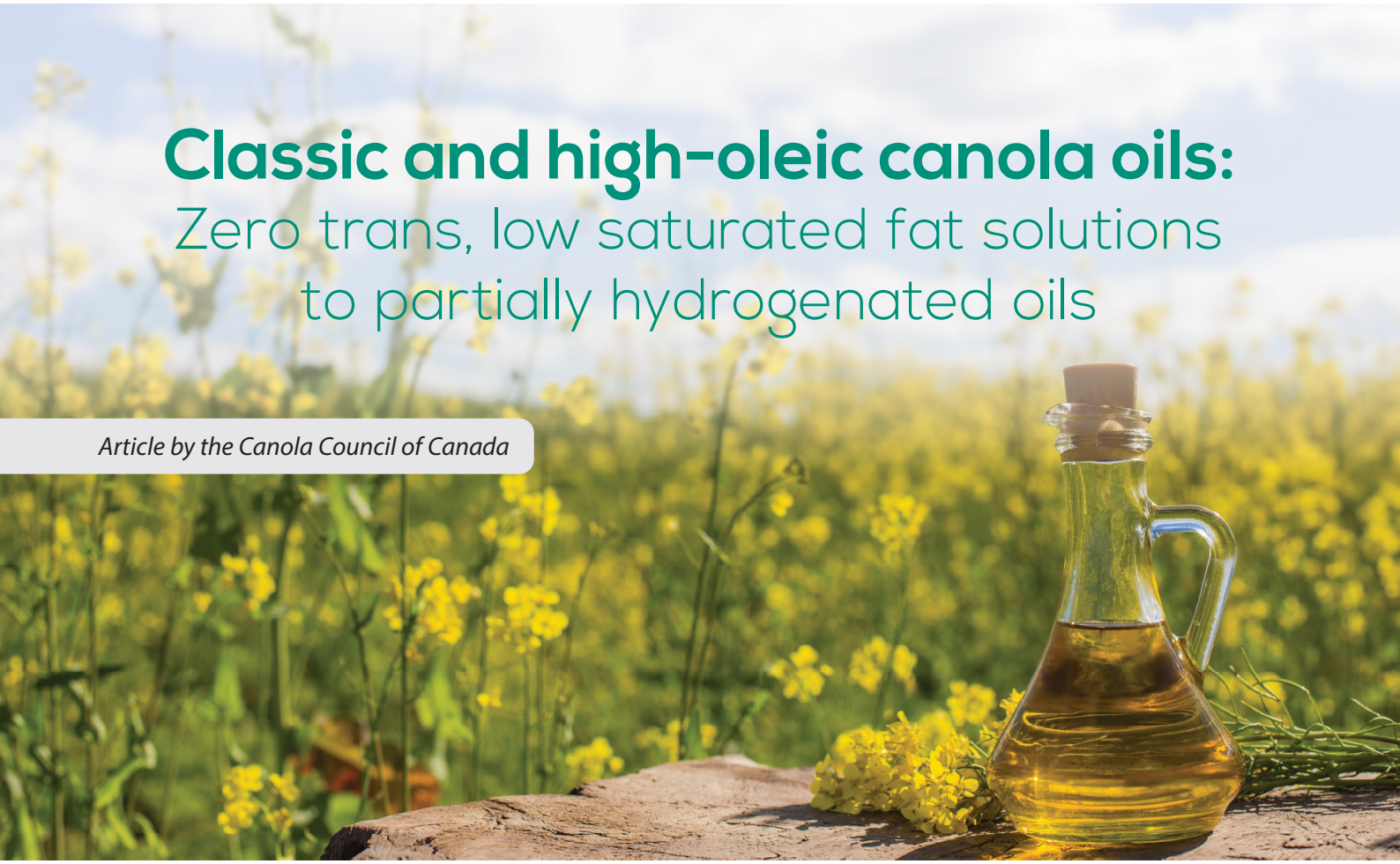
Classic and high-oleic canola oils:
Zero trans, low saturated fat solutions to partially hydrogenated oils



Article by the Canola Council of Canada

Canola oil is one of the healthiest oils in the marketplace with zero trans fat and cholesterol, healthy monounsaturated and polyunsaturated fats, and the lowest amount of saturated fat of all common culinary oils. Today, there are two types of canola oil: commodity or classic, which is sold at retail, and high-oleic or high-stability, which is newer and sold almost exclusively to food companies and food service operations.

Both oils have the same low level of saturated fat and positive health attributes. The only difference between them is that high-oleic canola oil, as its name suggests, contains more oleic acid (a monounsaturated fat) and less polyunsaturated fats, namely alpha-linolenic acid (ALA) and linoleic acid (LA). This fat profile makes high-oleic canola oil more stable, allowing for greater heat tolerance and longer shelf life.

High-oleic canola oil, and in some culinary applications classic canola oil, is a great replacement for partially hydrogenated (PH) oils used in food products and food service, which account for about 80% of trans fat in North America. Trans fat is artificially formed when liquid vegetable oils are turned into solid fat using a process called partial hydrogenation, hence the term partially hydrogenated oils.

Why is trans fat bad?

Just like saturated fat, trans fat increases LDL levels or bad cholesterol in the blood. Unlike saturated fat, trans fat can also decrease the HDL levels or good cholesterol – both of which increase the risk of heart disease.

The 13 April 2006 issue of the *New England Journal of Medicine* included a review of the scientific evidence regarding trans fat in the American diet. The authors concluded that heart disease risk could be reduced if PH oils are replaced by trans-free oils with healthy profiles. They said that "complete or near avoidance of trans fats … would be prudent to minimise health risks" and "alternatives [to PH oils] should be low in both trans and saturated fats."

Table 1: Food oil smoke points. (Source: University of Lethbridge)

Oil	Smoke point	
	(° F)	(° C)
Sunflower high-oleic	478	248
Canola high-oleic	475	246
Peanut	471	244
Canola	468	242
Safflower high-oleic	468	242
Sunflower	464	240
Corn	453	234
Soya bean	453	234
Safflower	446	230
Grapeseed	435	224
Olive processed	428	220
Extra-virgin olive	331	166

Smoke points were determined according to AOCS Method Cc 9a-48. Results are averages of triplicate determinations, where error of estimation was within 3,5% of measured value.

[1]On 6 October 2006, the US Food and Drug Administration authorised a qualified health claim for canola oil due to its unsaturated fat content and ability to help reduce the risk of coronary heart disease. It states: Limited and not conclusive scientific evidence suggests that eating about 1½ tablespoons (19 grams) of canola oil daily may reduce the risk of coronary heart disease due to the unsaturated fat content in canola oil.

Table 2: Dietary fat comparison chart. (Source: POS Pilot Plant Corporation)

Oil	Saturated fat %	Mono-unsaturated fat %	Poly-unsaturated Omega-3 fat %	Poly-unsaturated Omega-6 fat %
Canola	7	61	11	21
Canola high-oleic*	7	70	3	20
Safflower	8	77	1	14
Flaxseed	9	16	57	18
Sunflower	12	16	1	71
Corn	13	29	1	57
Olive	15	75	7	9
Soya bean	15	23	8	54
Peanut	19	48	Trace	33
Cottonseed	27	19	Trace	54
Lard	43	47	1	9
Palm	51	39	Trace	10
Butter	68	28	1	3
Coconut	91	7	0	2

** The amounts of oleic and alpha-linolenic acids vary slightly among brands. This is an average representation.*

That said, canola oil is the ideal substitute for PH oils because it is both trans-fat free and low in saturated fat[1].

Classic canola oil

Classic canola oil is a multi-purpose oil that contains approximately 61% monounsaturated fat, 32% polyunsaturated fats (11% ALA and 21% LA) and 7% saturated fat. A less saturated substitute for other vegetable oils, canola oil can be used wherever liquid oil is desired, including cooking oils, salad dressings, snacks and pan-release spray.

> In high-oleic canola oil, increased levels of the monounsaturated fat oleic acid displace a small percentage of polyunsaturated fats found in classic canola oil.

Classic canola oil delivers great performance and has a high smoke point, making it desirable for use in high temperature cooking (*Table 1*). The oil can be used for sautéing, stir- and deep-frying, baking, fondue, marinades and vinaigrettes. It is also a great base for making flavoured oils and can be substituted for solid fat in some baking recipes.

A study at the University of Lethbridge commissioned by the Canola Council of Canada (*www.canola-council.org/canola_pan.html*) looked at the effects of common cooking practices on the stability of classic canola oil. Results indicated that negligible, if any, amounts of trans fat were created during baking, stir-frying and deep-frying for long periods of time.

High-oleic canola oil

High-oleic canola oil is most commonly used in commercial food production and food service, as it has prolonged stability under high heat conditions. Unlike PH oils found in many processed foods, such as cookies and crackers, and in commercial frying applications, high-oleic canola oil does not contain any trans fat. It has an impressive nutrition profile with roughly 70% monounsaturated fat, 23% polyunsaturated fats (3% omega-3) and (20% omega-6) and 7% saturated fat. It has a high smoke point (475°F/246˚C) – seven degrees higher than classic canola oil.

In high-oleic canola oil, increased levels of the monounsaturated fat oleic acid displace a small percentage of polyunsaturated fats found in classic canola oil (*Table 2*). Stability of an oil is directly related to its degree of unsaturation. Oils with higher levels of polyunsaturated fats, such as ALA and LA, are less stable than oils with higher levels of oleic acid. Thus, high-oleic canola oil is more heat-resistant and longer lasting than its classic counterpart.

When should high-oleic canola oil be used instead of classic canola oil? When greater performance and higher heat tolerance is desired in a commercial kitchen, high-oleic canola oil is a better choice. It allows for extended fry life and cost efficiencies. As a result, high-oleic canola oil is becoming a popular choice for United States and Canadian restaurants and food service operations, including universities, state fairs, resorts and supermarket delis, as they strive to eliminate artificial trans fat from their menus.

Acing the fry test

Frytest.com LLC, an organisation independent of the cooking oil industry, commissioned Texas A&M in 2006 to test ten oils in a zero trans-fat cooking oil contest, three of which were high-oleic canola oil. Each oil was used to fry 300 batches of French fries and compared against fries cooked in PH soya bean oil. Results released in early 2007 revealed that all of the zero trans-fat oils, including high-oleic canola oil, have excellent fry life and are functionally equivalent to or better than PH oil. None of the oils even came close to the end of their fry life after 300 uses.

In addition, the zero trans-fat oils were preferred by consumer evaluators over the PH oil. All ten oils maintained quality during repeated frying for 13 days. There were insignificant differences in French fry flavour, taste, texture or appearance compared to the PH oil. According to Frytest.com, this study "proves there is no need to partially hydrogenate oils to obtain superb fry life and confirms that zero trans-fat oils are preferred by consumers."

High-oleic and classic canola oils offer solutions to eliminate trans and lower saturated fats in food products prepared in the home and in food service operations. Not only are these canola oils good for everybody, but good for the food industry, too.

For the original article, visit *www.canolacouncil.org*.