

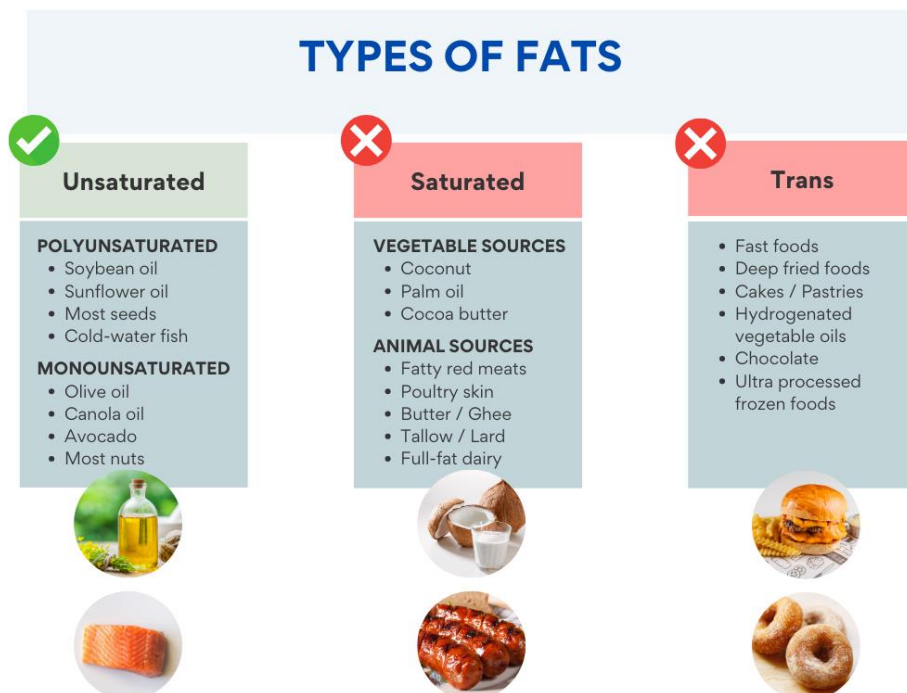
# Seed Oils: Separating Science from Speculation

Margaret Schroeder MPH, RDN, LDN | April 25, 2025



As a registered dietitian, I frequently hear questions about which dietary fats are "good" or "bad" for heart health. Recently, seed oils—like canola, sunflower, safflower, and soybean oil—have become a hot topic. Claims linking these oils to inflammation and chronic disease have flooded social media, adding to the growing list of foods the internet insists you should “never eat again.” ***These assertions can be confusing and may lead patients to make drastic dietary changes that are not supported by scientific evidence.***

You’ve likely come across the posts, heard the claims, and found yourself wondering: ***Are seed oils really bad for you?*** So, let’s begin to examine what the evidence really says, to dispel some of the myths surrounding seed oils, and explore their role in heart health. We want to give you the facts, so that you



can make informed, evidence-based choices that are in line with your personal health and nutrition goals.

Image Source: Margaret Schroeder, MPH, RDN, LDN

## What Are Seed Oils?

Seed oils are extracted from the seeds of plants like canola, soybean, sesame, corn, sunflower, or safflower. A large body of research supports the use of seed oils for their high polyunsaturated fat content, particularly omega-6 linoleic acid, which has been linked to health benefits such as: Reduced low density lipoprotein (LDL) or “lousy” cholesterol, improved heart health, lower risk of cardiovascular disease, stroke and type 2 diabetes, and potential anti-inflammatory effects in proper ratios with omega-3s. (Jackson, Harris, et al., 2024)(Hooper, Martin, et al., 2020)(Markland, Wu et al., 2019)(Virtanen, Wu, et al., 2018) In fact, in a recent 2025 study, adipose tissue content of linoleic acid was *inversely* associated with all-cause mortality. (Bork, Dahm, et al., 2025)

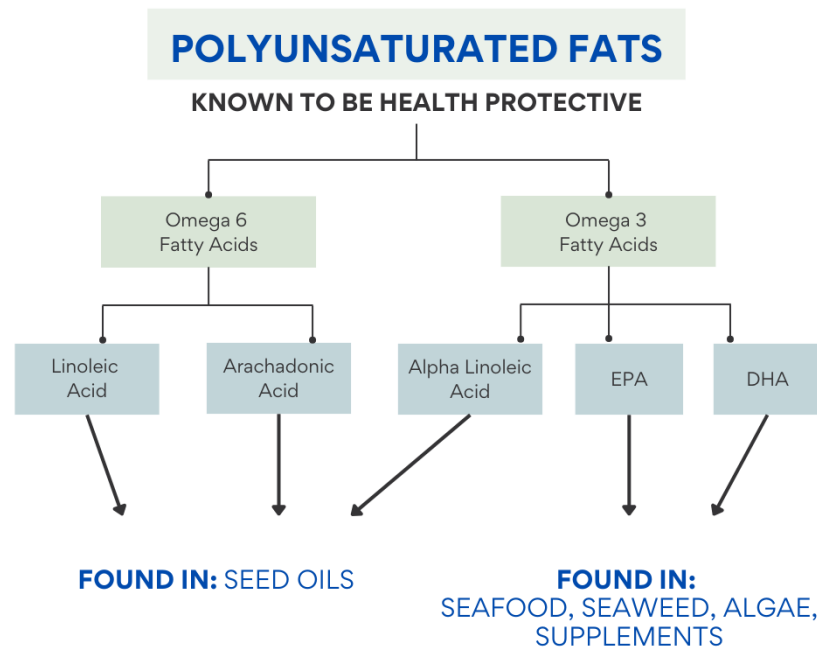


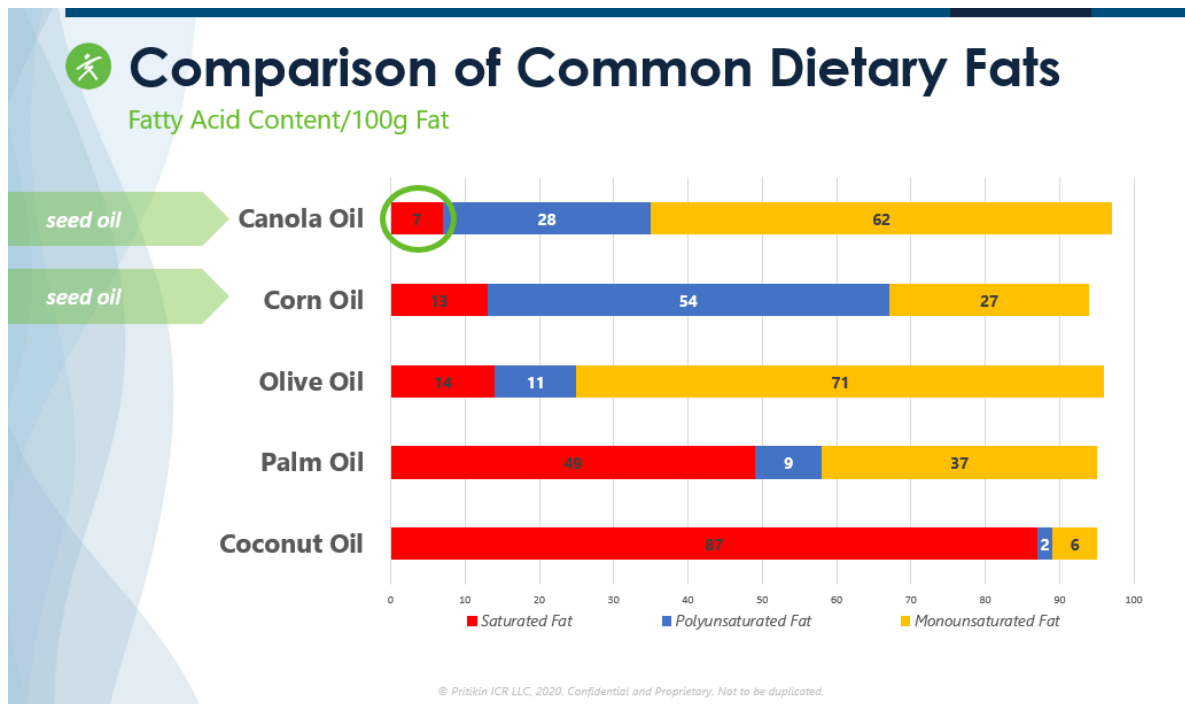
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## Seed Oil Composition

It's important to note that all oils are a blend of different fatty acids and are categorized based on the predominant type of fatty acid in that oil. For example, canola oil is comprised of about 61% monounsaturated, 32% polyunsaturated (21% linoleic acid [an omega-6], and 11% alpha-linolenic acid [an omega-3]), and only about 7% saturated fat content. (Dunford, 2018) ***This composition makes canola oil one of the healthiest cooking oils, as it is low in saturated fat and has a good balance of omega-6 and omega-3 fatty acids.***

Linoleic acid (a polyunsaturated omega 6) makes up about 40 to 80% of the *total* fatty acid content of most seed oils, except for canola oil, which is about 21%, as noted above. (Martin, 2023)(Dunford, 2018) Humans cannot synthesize linoleic acid, so it must be consumed in the diet, and is crucial for human health as it plays a vital role in normal human growth and development, skin health, brain function, and cardiovascular and cardiometabolic health, among other things. (Djuricic, Calder, 2021)(Marandoni, Agostoni, et al., 2020) Current recommendations for linoleic acid intake fall between 5 to 10% of an individual’s total daily energy intake. (Jackson, Harris, et al., 2024)(Fritsche, 2014)

While seed oils are rich in polyunsaturated omega 6s like linoleic acid, they are also rich in heart-healthy monounsaturated fats, and low in saturated fats. **Canola oil contains the least amount of saturated fat as compared to any other oil.** It is smart to limit saturated fat intake in the diet, as it can raise your LDL cholesterol, which is a major risk factor for coronary artery disease and other cardiovascular complications. In fact, **replacing saturated fats (like butter) with polyunsaturated fats (like seed oils) has been shown to reduce the risk of cardiovascular disease, and is associated with a lower risk of total and premature mortality.** (Zhang, Chadaideh, et al., 2025)(Peterson, Maki et al., 2024)(Hooper, Martin, et al., 2020)(Tindall, Peterson, et al., 2019)(Sacks, Lichtenstein, et al., 2017)



### Why are Seed Oils Controversial?

Seed oils are widely used in cooking and food production due to their affordability, versatility, and high smoke-point – this means that they are also used in the production of many processed and packaged foods. **Ultra-processed foods have been associated with an increased risk of cancer, stroke, obesity, type 2 diabetes, high blood pressure, and other chronic health conditions.** (Monteiro, Cannon, et al., 2019) Because many highly processed foods contain seed oils, this contributes to the

perception that seed oils are “unhealthy.” However, it’s important to take a step back and recognize the bigger picture. Ultra-processed foods, such as chips, packaged baked goods, sugary cereals, and processed meats or cheeses, are often also very high in sodium, added sugars, saturated fats, dietary cholesterol, and/or refined carbohydrates. These are ingredients that we know for a fact can negatively impact health when consumed in excess. ***Diet patterns that include ultra-processed foods are linked to poorer health outcomes, but the reality is that seed oils themselves are unlikely to be the culprit.*** (Martin, 2023)(Harvard, 2022)(Monteiro, Cannon, et al., 2019)

In fact, the science overwhelmingly shows us that when used in moderation, these oils can have a healthy place in our diet, and in many ways, can even *benefit* our health. Thus, while critics like to claim that the processing of seed oils, and the high omega-6 content, promotes chronic disease and/or inflammation, the relationship between seed oils and our health is much more positive, and more complex, than these claims would suggest.

### ***MYTH #1: Seed Oils Are Linked to Chronic Disease***

Concerns about seed oils and chronic disease often stem from anecdotal evidence or a small pool of outdated studies. As Registered Dietitian Charlotte Martin, MS, RDN, CSOWM noted in *Nutrition Daily*, studies like the *Sydney Diet Heart Study* and the *Minnesota Coronary Experiment* had significant design flaws, including short durations, high withdrawal rates, and potential confounding from trans fats in intervention diets. She explains that during the 1960s and 1970s, partial hydrogenation of vegetable and seed oils was common, introducing trans fats—a known risk factor for heart disease—which may have skewed the results. (Martin, 2023)

A growing and robust body of research consistently shows that ***diets rich in polyunsaturated fats, including those from seed oils, are not only linked to reduced cardiovascular risk and improved lipid profiles, but also to reduced premature and total mortality.*** (Zhang, Chadaideh, et al., 2025)(Bork, Dahm, et al., 2025)(Marangoni, Franca, et al., 2020)(Markland, Wu, et al., 2019)(Virtanen, Wu, et al., 2018)(Harris, Mozaffarian, et al., 2009) Omega-6 linoleic acid has also been linked to health benefits such as lower risk of stroke, type 2 diabetes, and metabolic syndrome (Jackson, Harris, et al., 2024)(Hooper, Martin, et al., 2020)(Markland, Wu, et al., 2019)(Virtanen, Wu, et al., 2018) Not only do seed oils have significant benefits, but a 2019 analysis of 30 studies found that individuals with higher amounts of linoleic acid in their bloodstream were *less* likely to develop heart disease, showing an *inverse* relationship between linoleic acid and cardiovascular disease. (Markland, Wu et al., 2019) Finally, a report published in the *American Journal of Clinical Nutrition* pooled the results of 11 large cohort studies and found that replacing saturated fats (like those found in butter) with polyunsaturated fats (like those found in seed oils) was more effective in reducing heart disease rates than replacing them with monounsaturated fats or carbohydrates. (Jakobsen, O’Reilly, et al., 2009)

Chronic diseases are influenced by multiple factors, including genetics, lifestyle, and diet. Oversimplifying the issue by blaming seed oils detracts from more effective, evidence-based chronic

disease interventions, such as increasing physical activity, managing stress, and improving overall diet patterns.



## DID YOU KNOW?

According to the AHA, getting at least 5-10% of your daily calories from omega-6s **reduces your risk of heart disease.**

Sources Cited: Jackson, Harris, et al., 2024; Fritsche, 2014; AHA, 2009

### **MYTH #2: Omega-6 Fatty Acids Promote Inflammation**

Inflammation is a natural part of the body's defense system and plays a key role in the human body's ability to heal. However, when it becomes excessive or fails to resolve, it can result in ongoing tissue damage, contributing to various health conditions and diseases. (Innes, Calder, 2018)

One of the most common myths about seed oils is that their omega-6 content, particularly the linoleic acid, causes inflammation, **but increasing linoleic acid intake does not have a significant effect on the blood concentrations of inflammatory markers.** (Djuricic, Calder, 2021)(Su H, Liu R, Chang M, et al., 2017)(Fritsche, 2014)(Johnson, Fritsche, 2012) The body does convert linoleic acid to arachidonic acid, a building block for inflammatory compounds. But only a *very small* amount of the linoleic acid we eat, about 0.2%, turns into arachidonic acid - and not all the compounds it produces cause inflammation. (Liao, 2022) Research also indicates that increasing arachidonic acid intake up to 1,500 mg/day *does not* negatively affect blood clotting, immune function, or inflammation markers, and may even enhance muscle and cognitive performance. (Djuricic, Calder, 2021) Omega 6s have even been linked to anti-inflammatory effects, particularly when considering its role in certain ailments like atopic dermatitis and autoimmune diseases like rheumatoid arthritis. (Jackson, Harris, et al., 2024)(Innes, Calder, 2018)(Dunford, 2018)

The main concern regarding inflammation arises when consuming a very high ratio of omega-6 fatty acids compared to omega-3 fatty acids. Omega-3s, known for their anti-inflammatory properties, help balance the effects of omega-6s. (Bertoni, Abodi, et al., 2023)(Mercola, D'Adamo, 2023)(Innes, Calder, 2018)(Fritsche, 2014) **However, omega-6 fatty acids do not increase inflammation when consumed as part of a well-balanced diet, such as the Pritikin Eating Plan.** Many whole, plant-based foods and lean proteins are rich in omega 3s, like walnuts, flaxseeds, chia seeds, hemp seeds, soy, seaweed, algae, and fish like tuna, mackerel, or salmon.

### **MYTH #3: Processing Seed Oils Makes Them Harmful**

The industrial processing of seed oils, involving steps like refining and deodorizing, is often criticized for rendering these oils "unnatural" or dangerous. However, the intent behind this processing is to get better

quality, lighter odor, longer stability, and to eliminate pollutants, free fatty acid (FFA) oxidation products, and other impurities. (Amed, Chatha, et al., 2024) Some of these processes do also remove the substances that contribute to the healthy properties of oils, but modern production methods ensure minimal formation of harmful compounds, such as trans fats, making today’s seed oils safe for consumption.

If you are, however, still worried or skeptical about modern production methods, you can opt to spend a few extra dollars and choose cold pressed, or expeller pressed seed oils. Cold pressed oils are extracted without high heat or chemical solvents, and expeller pressed oils are extracted without chemical solvents, preserving more of their natural nutrients and flavors. While they may come at a higher price, they can be a good choice for those who prioritize minimal processing while still benefiting from the healthy fats found in seed oils. Using mindful amounts of other predominantly unsaturated fats such as olive oil can be a great option, as well.

The bottom line? Whether they are regular, cold-pressed, or expeller-pressed, seed oils can be part of a healthy eating plan.

#### ***Myth #4: Cooking with Seed Oils Releases Harmful Compounds***

Finally, there is a concern that heating seed oils creates toxic substances which may contribute to oxidative stress and inflammation. These substances like aldehydes and free radicals are formed as byproducts during the breakdown of fats and oils, especially when they are exposed to high heat. The claim that cooking with seed oils releases harmful compounds is often overstated or misrepresented, especially when oils are used within their smoke point range. Smoke point can be defined as the temperature at which the oil starts to break down and produce visible smoke, and is determined by level of refinement, free fatty acid (FFA) content, oil composition, presence of impurities, and antioxidant content. (Dunford, 2018)

<b>Cooking Oil</b>	<b>Smoke Point (°F)</b>
Avocado Oil	520°F
Safflower Oil	450-510°F
Soybean Oil	493°F
Sunflower Oil	450°F
Corn Oil	352-441°F
Extra Virgin Olive Oil	320-406°F
Canola Oil	400°F
Grapeseed Oil	400-420°F

Cooking Oil	Smoke Point (°F)
Coconut Oil	350°F

Sources Cited: ECCQ, 2023; Kime, 2024

While *all oils* begin to degrade at high temperatures, research shows typical home cooking practices don't produce harmful levels of these byproducts. Cooking at temperatures below smoke point and avoiding excessive reuse of oil minimizes any potential risks. (Liao, 2022)(Katragadda, Fullana, et al., 2010) Stir-frying your food can be a great option as it generally has a lower cooking temperature, resulting in the lowest aldehyde emissions. (Peng, Lan, et al., 2017)

Oils high in polyunsaturated fats (like soybean or sunflower oil) are more prone to oxidation, while those rich in monounsaturated fats and antioxidants (like canola oil and extra virgin olive oil) are more stable. Compared to other oil options, canola oil has also been shown to have relatively lower emissions of byproducts even at higher temperatures. (Peng, Lan, et al., 2017) (Katragadda, Fullana, et al., 2010) One reason for this is that canola oil goes through refining processes to remove impurities that could accelerate oxidation, thereby improving smoke point.

Restaurant and factory deep-fryers that reuse oils for several days in a row are the real culprits of the production of potentially harmful compounds, as these methods produce the highest levels of oil degradation and total aldehyde emissions. (Liao, 2022)(Peng, Lan, et al., 2017)

## Conclusion

In summary, seed oils can be a beneficial part of a heart-healthy diet when used in moderation and as part of a balanced eating pattern like the Pritikin Eating Plan. The myths surrounding their potential harms are often based on misinformation or isolated studies, while ***the broader body of evidence supports their role in improving cholesterol levels and reducing cardiovascular risk.*** While oils, including seed oils, provide essential fats, they are calorie-dense and should be consumed mindfully to support heart health and weight management. Rather than blaming seed oils for chronic ailments without the evidence to back this claim up, we should instead focus on overall dietary patterns that prioritize nutrient-rich, minimally processed foods, and minimize ingredients that we *do* know are linked to chronic disease. For optimal health, it's important to limit or avoid foods high in sodium, saturated fat, trans fat, dietary cholesterol, and added sugars. The Pritikin Eating Plan helps you lower risk for chronic disease by emphasizing whole, mostly plant-based foods such as fruits, vegetables, whole grains, lean proteins, and a variety of healthy fats from sources like seed oils. By adopting a more sustainable, holistic approach—emphasizing balanced nutrition, physical activity, good rest, and a healthy mindset—we can better support long-term heart health and overall well-being.

## Key Takeaways

- **Seed Oils Are Not Inherently Harmful** – Despite internet claims, scientific evidence supports the health benefits of seed oils, particularly their role in reducing LDL cholesterol and cardiovascular disease risk.
- **Polyunsaturated Fats, Including Omega-6s, Are Beneficial** – Linoleic acid, an omega-6 fatty acid found in seed oils, is essential for health and does not inherently cause inflammation when consumed in appropriate ratios with omega-3s.
- **Ultra-Processed Foods Are the Bigger Concern** – Many ultra-processed foods contain seed oils, but their health risks stem from the high sodium, saturated fat, dietary cholesterol, and added sugar content, rather than the seed oils themselves.
- **Processing of Seed Oils Does Not Make Them Dangerous** – While refining removes some nutrients, modern methods minimize harmful compounds like trans fats and environmental impurities. Cold-pressed and expeller-pressed options are available for those who prefer less processing.
- **Cooking with Seed Oils at Normal Temperatures Is Safe** – The claim that heating seed oils releases harmful toxins is overstated, as moderate cooking temperatures do not produce dangerous levels of byproducts like aldehydes.
- **Replacing Saturated Fats with Unsaturated Fats Improves Heart Health** – Swapping butter and coconut oil for seed oils can lower LDL cholesterol and reduce cardiovascular disease risk.

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