

SMOKE POINT: A look at chia oil and other cooking oils

Chia Oil

is cold-pressed from 100% pure chia seed, cultivated with passion and care in South America. Grown by regenerative agriculture, chia is one of the most sustainably crops in the world. Chia is the most abundant source of plant omega-3 found in nature. Chia oil provides an excellent source of this essential nutrient. In addition to the omega-3 (called ALA—Alpha Linolenic Acid), chia oil is high in phytochemicals (plant nutrients) with antioxidant and anti-inflammatory properties.

In producing chia oil, the temperature is kept at low levels throughout the entire process, and no chemical solvents or diluents are used. This safeguards the seed's nutritional characteristics and stability.



Chia oil has a light, nutty, and earthy flavor that adds character but doesn't overpower your food—adding a note of appealing flavor and complementing other ingredients. It has a silky and pleasing, light mouthfeel. Chia oil can also be blended with other oils you enjoy like extra virgin olive oil or avocado oil.

Chia oil has a very high smoke point (420°F / 214°C), so it can be used for cooking and baking, and is delicate enough to be used from the bottle to drizzle into soups, on grains, make tasty salad dressings, marinades, sauces, pestos and more. Or simply pour a little in a dish and dip a piece of your favorite bread.



ANCESTRAL SUPERFOOD

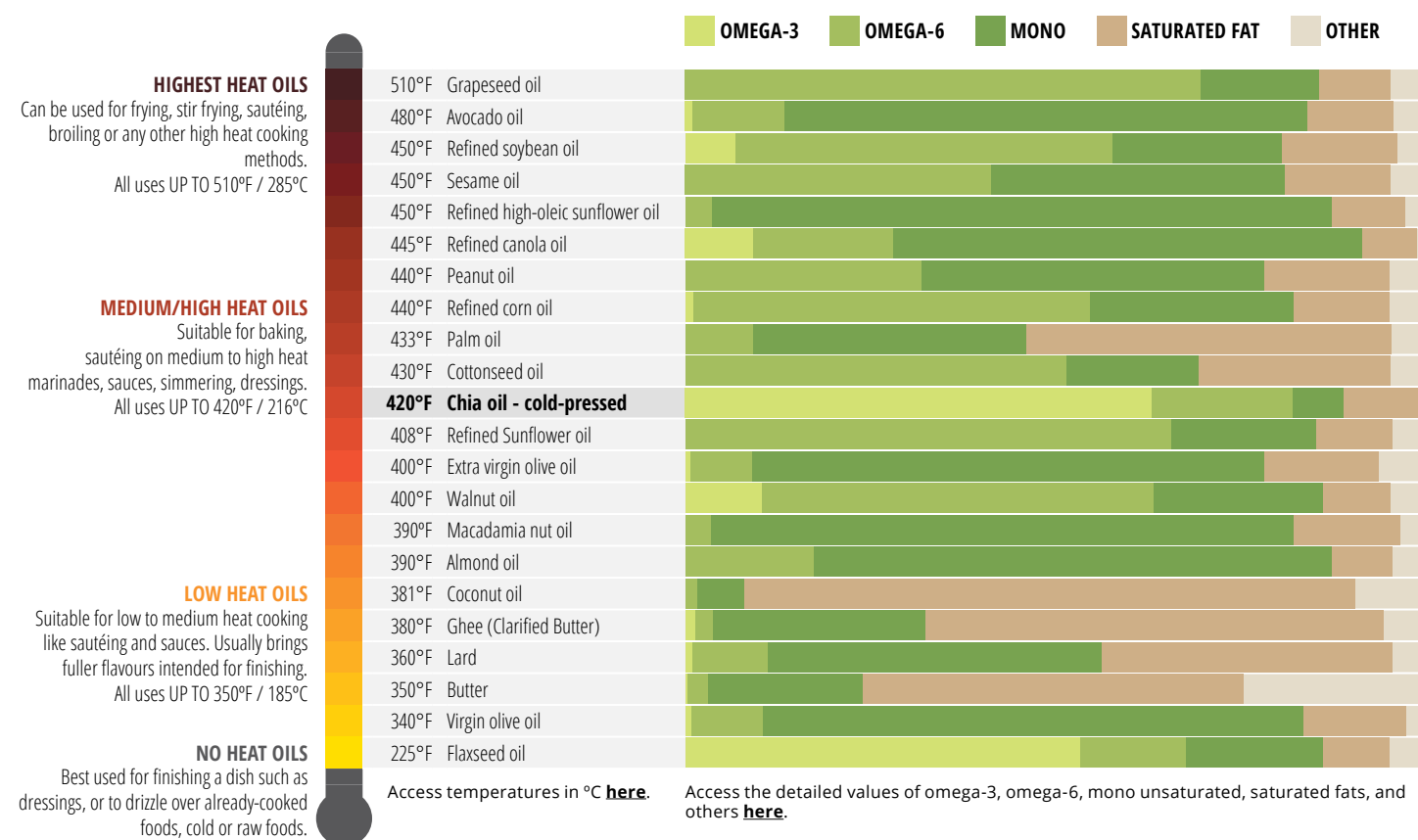
Chia has a long history, dating back 1000s of years and has been used for centuries for its ability to provide sustenance through its high nutritional density. Chia seeds are tiny powerhouses – possibly the smallest food with the highest nutritional value in the world.

Smoke points and fatty acid distribution of common culinary oils and fats including chia oil

What is the smoke point?

The smoke point, also called the burning point, is the temperature at which an oil or solid fat starts to produce a visible smoke that typically appears bluish-grey in color (1). You can also notice a change in smell, and the chemistry of the oil changes making the oil unsuitable to eat. The result of heating oil above the smoke point is oxidation and chemical breakdown, forming compounds that have been shown to potentially increase health risks to humans (2-5).

Keep in mind that smoke points can vary widely between manufacturers. In general, more refined oils will have higher smoke points than unrefined, virgin, or extra-virgin oils.



UNREFINED VERSUS REFINED

Many high smoke point cooking oils are highly refined, lack flavor, and are low in nutrition aside from energy (calories). Refined oils are frequently bleached and exposed to high heat during the industrial refinement process, removing beneficial polyphenol compounds and nearly all flavor and aroma (7-8).

Unrefined oils generally have a lower smoke point than other cooking oils. Still, they are frequently a better choice for cooking because they contain mainly heat-stable fats and retain their many naturally occurring phytochemicals, including antioxidant compounds, polyphenols, and tocopherols (8).

Chia oil, which is cold-pressed and unrefined, has one of the highest smoke points of all the plant oils (6), so it is both safe to cook with, as well as serve at room temperature or cold, and offers high levels of important phytonutrients like phenolic acids, tocopherols, and phytosterols.



BALANCING INFLAMMATION

Chronic inflammation has shown to be a risk factor for major health conditions, including heart disease, diabetes, and many others. The typical Western diet is too high in pro-inflammatory foods, among them omega-6 fat sources like vegetable oils including soybean, sunflower, palm, and safflower. Omega-3 fats, like those found in chia oil, are anti-inflammatory in nature. Increasing them in the diet can help establish a healthier omega-6 to omega-3 ratio overall, creating a better balance to promote health.



Why isn't smoke point the *only* thing that matters?

Until recently, it was believed that the more unrefined oils would have lower smoke points than refined oils because they contain natural 'impurities' and free fatty acids. However, this isn't wholly accurate nor the full story. Some unrefined plant oils—like chia oil—also bring perks like higher natural phytonutrient levels, including antioxidants and other compounds that have been shown to benefit human health, but importantly, also actually help protect the oil during cooking which ensures a higher smoke point.

Refined oils were long thought to be neutral-flavored with a longer shelf life and a higher smoke point (7). But recent research has shown that many cooking oils touted for their very high smoke points, like safflower, soybean, corn, and sunflower oils, have low oxidative stability. In other words, they're more likely to produce harmful oxidative byproducts when heated. These cooking oils are ones that primarily consist of omega-6 polyunsaturated fats (8).

Ultimately, choosing a quality culinary oil is more than just about the smoke point. Equally important are the nutrition and types of fats like omega-3 polyunsaturated or monounsaturated fats, any valuable antioxidants that may be present, and of course, what will work best for the flavorful food you're aiming to create.

How does chia oil compare to animal fats like butter, ghee, and lard?

Like comparing apples to oranges, but let's discuss!

Animal fats contain high levels of cholesterol and saturated fatty acids (SFAs), which, when consumed in excess, are known to be risk factors for heart disease. Dietary guidelines currently recommend higher consumption of polyunsaturated and monounsaturated fats (PUFAs and MUFAs) and lower consumption of saturated fats. When it comes to storage and cooking, however, we do know that due to their high saturated fatty acid content, animal fats are very stable and generally have higher smoke points which allow for higher cooking temperatures (9). Plant oils are higher in mono- and polyunsaturated fats and are different from animal fats in terms of their stability. This is what also largely makes plant-oils more nutritious.

Chia oil, a plant oil, is rich in heart-healthy, anti-inflammatory omega-3 polyunsaturated fatty acids and contains lower saturated fatty acid levels. Like other plant oils, they are more fragile due precisely to what makes them nutritionally rich. The level of unsaturation makes them easier to break down and more flexible, which benefits the body. In cooking, however, this means they will also break down somewhat easier than saturated fats—hitting their smoke point at a lower temperature. However, due to the high antioxidant levels in **chia seeds** that protect the oil from degradation, **chia oil** uniquely has one of the highest smoke points among the plant oils. As a result, **chia oil** can be used safely and healthfully as a cooking oil at most common temperatures used during cooking, stir-frying, baking and even roasting up to 420° Fahrenheit.

REFERENCES:

1. American Oil Chemists#39; Society (2011); AOCS Official Method Cc 9a-48, Smoke, Flash and Fire Points Cleveland Open Cup Method. Official methods and recommended practices of the AOCS - (6th ed.). Champaign, Ill. : American Oil Chemists#39; Society.
2. Journal of Emerging Technologies and Innovative Research (JETIR), October 2020, Volume 7, Issue 10.
3. US Department of Agriculture (USDA), Agricultural Research Service, Nutrient Data Laboratory.
4. USDA National Nutrient Database for Standard Reference, Legacy. Current Version: April 2018.
5. FoodData Central (usda.gov). Accessed August 15, 2022: <https://fdc.nal.usda.gov/fdc-app.html#/food-details/2284234/nutrients>
6. Third-party analysis by EUROFINS lab for Benexia®.
7. Chapter 2 - Composition, Structure, Physical Data, and Chemical Reactions of Fats and Oils and Their Associates, Michael Bockisch, Fats and Oils Handbook, AOCS Press, 1998, Pages 53-120.
8. Guillaume C., et al. "Evaluation of Chemical and Physical Changes in Different Commercial Oils during Heating". Acta Scientific Nutritional Health 2.6 (2018): 02-11.
9. Vegetable Oils in Food Technology: Composition, Properties and Uses. 2nd Edition. Editor: Frank D. Gunstone, March, 2011.