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The Medicine in Olive Oil, and Why Most Bottles Contain Almost None of It

Analysis by A Midwestern Doctor | November 20, 2026

STORY AT-A-GLANCE

- For thousands of years, olive oil was valued as much as a medicine as a food, and modern research has largely supported that reputation. In large randomized trials, adding extra virgin olive oil to a Mediterranean diet lowered rates of heart attacks, strokes, diabetes, and atrial fibrillation
- Those benefits come not from the oil's fat, but from a small fraction of compounds (e.g., polyphenols) that refining destroys and that degrade with time, heat, and light. Two bottles labeled extra virgin can differ more than tenfold in them, which means the right oil delivers its benefits in a teaspoon, and the wrong one delivers little at any dose
- One of these compounds, oleocanthal, was discovered because it stings the throat the same way ibuprofen does, and it was then found to block the same enzymes. In clinical trials, olive oil has lowered markers of inflammation, the Mediterranean diet has the most evidence of any diet for rheumatologic patients, and in a small trial, olive oil applied directly to arthritic knees relieved pain better than an NSAID gel
- Olive oil has long been one of the most commonly faked foods, but testing shows the larger problem today is genuine oil that has gone stale or rancid before it reaches the shelf
- In this article, I will review the science behind olive oil's medicinal compounds, how to recognize fresh oil, the lab-tested oils that contain the most of them, and what research has found on olive leaf extract

Olive oil is little more than the juice of a fruit, yet few foods have been prized, traded, or counterfeited for as long, and across the ancient Mediterranean it was valued as much for healing as for eating.[1] Hippocrates called it “the great healer” and described over 60 medical uses for it.[2] Into the 20th century, pharmacies in the U.S. and Europe sold olive oil to be taken for digestive problems and high blood pressure.[3]

The modern case for it was put to a direct test in a randomized Spanish trial of 7,447 people at high cardiovascular risk, where those assigned a Mediterranean diet supplemented with extra virgin olive oil had roughly 30% fewer heart attacks, strokes, and cardiovascular deaths than those advised to cut their fat intake.[4]

They were also 40% less likely to develop diabetes[5] and 38% less likely to develop atrial fibrillation,[6] and in a second Spanish trial of 1,002 patients who already had heart disease, the diet led to fewer major cardiovascular events over seven years than the low-fat diet cardiologists have long recommended.[7]

The key point, however, is that these results were seen in people eating fresh, genuine olive oil (participants in the first trial were given a liter of extra virgin olive oil each week),[8] whereas much of the olive oil sold in America is stale or not truly extra virgin. As such, many Americans who adopt a Mediterranean diet likely never receive its full benefit, because the oil at its center is missing the compounds responsible for most of it.

The Medicine Is Not the Fat

Roughly 70% of olive oil’s fat is oleic acid, a monounsaturated fat far more stable than the polyunsaturated fats that dominate seed oils.[9] But the fat is not where the medicine is. Bottles labeled “olive oil,” “pure,” or “light” are mostly refined oil,[10] yet still contain about as much oleic acid as the best extra virgin oil.[11] What they lack is the remaining 2% of the oil,[12] a mix of over a hundred compounds that refining destroys and which research credits for most of olive oil’s benefits.

The most significant are the polyphenols, which in extra virgin olive oil are the most abundant natural antioxidants and have been linked to slowing the progression of diseases driven by oxidative stress, such as cardiovascular disease, cancer, and the degenerative diseases of aging.[13]

Their effects are well enough established that in 2012, European regulators approved a health claim stating that olive oil polyphenols protect blood fats from oxidative damage. The claim can only be made for oils containing at least 5 milligrams (mg) of hydroxytyrosol and its related compounds per 20 grams of oil, the amount it specifies be consumed daily.[14] Sadly, relatively few oils on the shelf state whether they meet it. The most notable of these compounds are:

- **Hydroxytyrosol —** one of the oil's most potent antioxidants, and the compound the European health claim is built on.
- **Oleocanthal —** the source of the sting at the back of the throat, which inhibits the same enzymes as ibuprofen (discussed below).

One of the least appreciated aspects of olive oil is that many of its most valuable compounds do not exist in the olive. The fruit instead contains oleuropein, a compound so bitter that a fresh olive is inedible until cured, which an enzyme converts into oil-soluble compounds (e.g., oleocanthal) only once the olives are crushed. In essence, the bitterness that makes a raw olive inedible becomes the oil's medicine, and much of that medicine is made in the mill.

Even then, less than 1% of the olive's phenolics end up in the bottle, so polyphenol content varies enormously, from roughly 50 to 800 mg per kilogram depending on the olive variety, where it was grown, how ripe it was at harvest, and how it was milled, whereas the European health claim requires about 250 mg per kilogram. Filtering and storage then reduce these compounds further.

This means two bottles legally labeled extra virgin can differ more than tenfold in the very compounds the research credits for olive oil's benefits, and it also means that the dose required depends entirely on the oil. In a typical supermarket oil at the health

claim's threshold, 20 grams (about 1.5 tablespoons) a day is needed to reach it, whereas in a lab-tested oil containing 1,000 mg per kilogram, a single teaspoon does.

This matters because Americans tend to assume that if something is good for them, more of it has to be better (olive oil "shots" being the latest example), when the compounds that make olive oil medicinal are found in small amounts and work in small amounts. The goal is not to consume more oil but to consume the right one.

The Natural Anti-Inflammatory

One of olive oil's most important medicinal properties was discovered by taste. In 1999, Gary Beauchamp, a researcher who studies the chemistry of taste and smell, sampled freshly pressed oil at a conference in Sicily and immediately recognized the burn it left at the back of his throat.[15]

He had just spent months swallowing ibuprofen for a pharmaceutical study, which produces an unusual sting felt only in the throat, and his team traced the sting to a compound they named oleocanthal and found that despite looking nothing like ibuprofen, it inhibits the same COX-1 and COX-2 enzymes that produce the prostaglandins responsible for swelling and pain.[16]

At equal concentrations in the lab, oleocanthal blocked 41% to 57% of COX activity, compared to 13% to 18% for ibuprofen.[17]

In people, the evidence is strongest for joint disease. Of the existing diets, the Mediterranean diet has the most research supporting its use for autoimmune disorders,[18,19] and we have found it frequently helps rheumatologic patients. In a randomized trial of 51 rheumatoid arthritis patients, those who switched to a Cretan Mediterranean diet had less inflammatory activity, better physical function, and more vitality after 12 weeks, whereas those who stayed on their usual diet saw no change.[20]

Olive oil also appears to work when applied directly to the joints. In a small double-blind trial of patients with knee osteoarthritis, olive oil rubbed onto the knee relieved pain more effectively than an NSAID gel,[21] and in another trial, olive oil applied with ultrasound worked as well as an NSAID gel for knee pain in female athletes, and faster.[22] More broadly, across 15 randomized trials, olive oil lowered C-reactive protein, and in seven, interleukin-6, two of the body's key markers of inflammation.[23]

Note: The amount of oleocanthal in a dietary dose is modest (50 grams of fresh oil provides roughly 10% of the ibuprofen dose used for pain relief).[24]

However, many of the diseases we struggle with are driven by a low-grade inflammation that never fully shuts off, so a small daily dose of a natural anti-inflammatory may be far more useful than an occasional large one, particularly since regular NSAID use carries considerable side effects. The hidden costs of conventional pain medications, and the overlooked alternatives to them, are discussed ***here****.*

This also means you can taste whether your oil contains it, as the sting grows stronger as oleocanthal levels rise,[25] which is why Mediterranean tasters have long graded prized oils as "one-cough" or "two-cough,"[26] whereas an oil with no sting at all likely contains very little.

Why the Oil Delivers Them Better Than a Pill

Unlike many plant compounds, olive oil's polyphenols are unusually well absorbed (roughly 40% to 95% for hydroxytyrosol and tyrosol).[27] Most importantly, the oil itself appears to be the best delivery system for these compounds.

When olive oil polyphenols were given in water, in yogurt, or even added to refined olive oil, they were absorbed less effectively than when they occurred naturally in extra virgin oil,[28] and researchers have cautioned that olive oil's phenolics work synergistically, so a single compound pulled out of the oil may not behave the same way on its own.[29] This mirrors the situation with turmeric and the curcumin in it.

The Brain and Cancer

Since chronic inflammation plays a role in arthritis, cancer, cardiovascular disease, and Alzheimer's, olive oil's anti-inflammatory compounds have been studied in each. When over 92,000 American nurses and health professionals were followed for 28 years, those consuming more than half a tablespoon of olive oil a day had a 29% lower risk of dying from neurodegenerative disease and a 17% lower risk of dying from cancer than those who rarely consumed it.[30]

Notably, the amounts involved were small (the highest category averaged about 9 grams a day), and the study began in 1990, long before anyone paid attention to polyphenol counts, so most participants were buying whatever their supermarket carried. This suggests even an ordinary bottle may provide meaningful benefits, and a fresh, high-polyphenol one may provide more.

Brain: In the lab, oleocanthal disrupted the formation of the tau tangles seen in Alzheimer's and protected neurons from amyloid fragments, while in mice it increased the brain's clearance of beta-amyloid.[31] In a small six-month trial of 25 adults with mild cognitive impairment, those given a high-polyphenol extra virgin oil (standardized to roughly 1,200 mg/kg) showed improved blood–brain barrier function and brain connectivity, which those given refined olive oil did not.[32]

Note: Why decades of amyloid-focused drug research has delivered so little, and the forgotten approaches which have shown promise for Alzheimer's disease, are discussed ***here****.*

Cancer: A 2015 Rutgers and Hunter College lab study found that oleocanthal killed pancreatic, breast, and prostate cancer cells in culture in as little as 30 minutes by rupturing their lysosomes, while leaving healthy cells unharmed.[33] Likewise, in a secondary analysis of the randomized Spanish trial, women given extra virgin olive oil developed breast cancer at roughly a third of the rate of those advised to cut their fat intake, though this finding rested on a small number of cases (35 in total).[34]

Fraudulent and Stale Oil

Since genuine extra virgin olive oil is expensive to produce and difficult for consumers to verify, it has long been one of the most commonly faked foods. Since Canada began testing retail olive oils in 1997, over 20% have proven fraudulent,[35] and in November 2023, Spanish and Italian police seized over 260,000 liters of oil diluted with lampante (the lowest, inedible grade) and sold as extra virgin.[36]

However, criminal adulteration is only a small part of the problem. Far more often, the oil is genuine olive oil that simply is not extra virgin, because it was made from poor olives or has gone rancid by the time it reaches the shelf. When UC Davis tested imported "extra virgin" oils sold in California, 69% failed the standard, typically for defects such as rancid, fusty, or musty flavors,[37] and a later study of oils sold to restaurants found 60% failed sensory standards despite nearly all passing the standard chemistry tests.[38]

As such, the greater risk for most people is not buying fake oil, but buying genuine olive oil too old or poorly made to deliver the benefits seen in the research.

Finding Oil That Contains the Medicine

Since olive oil degrades from the moment it is pressed, freshness is the most important thing to select for:

- **A harvest date —** Most oils in American stores list only a "best by" date (typically set 18–24 months after bottling), which says little about when the olives were picked. A growing number of producers print a harvest date, and UC Davis researchers recommend using oil within 15 to 18 months of it.[39] Freshness frequently trumps brand.

- **Packaging —** In a year-long storage study, oil kept in dark glass retained its phenolic compounds far better than oil kept in clear plastic exposed to light.[40] Choose dark glass or tins, avoid the top shelf (closest to the store lights), and keep the bottle in a dark cabinet away from the stove.

- **Early harvest —** Since polyphenols decline as olives ripen,[41] early-harvest oils are more bitter, more pungent, and richer in them.

- **Your senses —** A good extra virgin oil should taste fresh and fruity, with some bitterness and a peppery sting. The most common defects are easy to recognize once you know them:[42] rancid oil smells stale, like old walnuts; fusty oil has a heavy, fermented smell; musty oil smells damp, like a basement; winey oil has a sour, vinegar-like sharpness.

For those seeking olive oil specifically for its medicinal properties, the only reliable option at present is to buy from **producers who harvest early, mill immediately, lab-test each batch, and publish the results** (e.g., a small number of producers make oil that typically tests at 500 to over 1,000 mg/kg, and the oil used in the brain trial above was standardized to 1,200 mg/kg).[43]

These are intensely bitter, so they are best taken raw, a small spoonful at a time or drizzled over finished food, particularly since olive oil's polyphenols only partly survive cooking (an oil sautéed at home lost 40% of them at 248°F and 75% at 338°F).[44]

*Note: Olive oil's linoleic acid content also varies by variety and ripeness, from roughly 3% to 21% (the greatest variability of any of its fatty acids),[45] and it rises as the fruit ripens.[46] **The varieties behind many of the highest-polyphenol oils** (e.g., Spain's Picual, its most widely grown variety) sit near the bottom of that range, whereas the mild Arbequina oils that dominate supermarket shelves and much of California[47] sit toward the top,[48] so choosing an early-harvest, high-polyphenol oil generally also selects for the lowest linoleic content.*

*So, while anyone who consumes large amounts of olive oil puts themselves at risk of excessive dietary linoleic acid, it is particularly unwise to do so with an oil of unknown variety (which describes **most** supermarket bottles), as its linoleic content may be several times higher than the most medicinal olive oils. Unfortunately, relatively few **olive oil brands source low linoleic acid olives**.*

For an everyday oil, independent testing of common brands found that price was a poor predictor of quality.[49] Once a bottle is opened, oxygen begins to degrade the oil each time it is uncapped, so it should be kept tightly sealed, kept away from heat (e.g., an oven), and used within a couple of months.

Note: Olive oil's effects may be significant enough to reduce the need for medication. In a six-month randomized crossover trial of patients with high blood pressure, those using extra virgin olive oil required 48% less blood pressure medication than when using sunflower oil, and 8 of the 23 participants no longer needed it at all.[50]

Those taking blood pressure or diabetes medications who add a high-quality olive oil to their diet should monitor their levels and work with their healthcare provider, as their doses may need to be adjusted.

Olive Leaf Extract

The oleuropein that makes raw olives inedible is far more concentrated in the olive tree's leaves, and they have a long medical history of their own. By the early 1900s, the British Pharmaceutical Codex listed olive leaves as a remedy for fevers, noting that a decoction of them had been used as a substitute for quinine in obstinate cases.[51]

In an eight-week randomized trial of adults with stage 1 high blood pressure, 500 mg of olive leaf extract twice a day lowered blood pressure about as much as captopril (a commonly prescribed blood pressure drug), while also lowering triglycerides, which the drug did not,[52] and in overweight middle-aged men, 12 weeks of olive leaf polyphenols improved insulin sensitivity by 15% and the responsiveness of the cells that produce insulin by 28% compared to placebo.[53]

Olive leaf extract also has a broad antimicrobial profile in laboratory studies, while human data and clinical experience are strongest for viral infections. Shortly after Morton Walker created the market for it with his 1997 book Olive Leaf Extract: Nature's Antibiotic,[54] I asked colleagues about their experiences with it, and they told me that while it could work for other infections, it worked best for viral ones.

Over the years, many patients have told me they found it helpful during viral illnesses, and it has been studied most closely for herpes.

For example, in a randomized double-blind trial of 66 patients with cold sores, a 2% olive leaf extract cream healed the lesions in an average of 2.8 days, compared to 5.0 days for 5% acyclovir cream (the standard treatment),[55] and a second randomized trial found an olive leaf gel matched acyclovir for pain relief and healing.[56] These findings are from research conducted in clinical settings. Results may not apply to all individuals.

*Note: The olive leaf extracts available vary considerably, as **the concentrated extracts are viewed as the most potent** (though also the most likely to cause reactions in sensitive individuals), while **the more balanced ones** are often better tolerated and seen as suited to a wider range of situations.*

Conclusion

Many Americans have likely never tasted a truly fresh olive oil, and have grown so used to stale, mild oil that the bitterness and sting of the real thing may read as a defect, when those are the very qualities that make it medicine. Since a high-polyphenol oil delivers those benefits in a fraction of the amount a supermarket bottle would require, learning what fresh olive oil should taste like is one of the most reliable ways to make sure you are getting what the research describes.

Author's note: This is an abridged version of a longer article which goes into greater detail on the history of olive oil fraud and the testing that exposes it, the specific brands I use, how I use olive oil in my own diet (including a healthy "potato chip" we've found tastes better than the real thing), and the olive leaf extracts I use. That article and its additional references can be read here.

This article is for informational purposes only and does not constitute medical advice. Consult a qualified healthcare provider before making changes to your health regimen.

A Note from Dr. Mercola About the Author

A Midwestern Doctor (AMD) is a board-certified physician from the Midwest and a longtime reader of Mercola.com. I appreciate their exceptional insight on a wide range of topics and I'm grateful to share them. I also respect AMD's desire to remain anonymous since AMD is still on the front lines treating patients. To find more of AMD's work, be sure to check out **The Forgotten Side of Medicine** on Substack.

Sources and References

- [1, 12, 15, 35] Mueller T. Extra Virginity: The Sublime and Scandalous World of Olive Oil. W. W. Norton, 2011
- [2, 17, 26, 29, 31] Int J Mol Sci. 2014 Jul 11;15(7):12323-12334
- [3, 11] Royal Society of Chemistry, February 21, 2017
- [4] N Engl J Med. 2018 Jun 21;378(25):e34
- [5] Ann Intern Med. 2014 Jan 7;160(1):1-10
- [6] Circulation. 2014 Jul 1;130(1):18-26
- [7] Lancet. 2022 May 14;399(10338):1876-1885
- [8] University of Barcelona, February 2013
- [9, 27, 28] Antioxidants (Basel). 2020 Jul 28;9(8):685
- [10] Antioxidants (Basel). 2020 Jun 20;9(6):543
- [13] Food Res Int. 2014;62:1062-1068
- [14] Commission Regulation (EU) No 432/2012, Official Journal of the European Union, May 16, 2012
- [16, 24, 25] Nature. 2005 Sep 1;437(7055):45-46
- [18] Biomedicines. 2020 Jul 8;8(7):201
- [19] Nutrients. 2025;17(8):1383
- [20] Ann Rheum Dis. 2003 Mar;62(3):208-214
- [21] J Clin Rheumatol. 2012 Mar;18(2):99-101
- [22] Avicenna J Phytomed. 2016 Sep-Oct;6(5):535-541
- [23] Nutrients. 2015 Sep 11;7(9):7651-7675
- [30] J Am Coll Cardiol. 2022 Jan 18;79(2):101-112
- [32, 43] Nutrients. 2022 Nov 30;14(23):5102
- [33] Mol Cell Oncol. 2015;2(4):e1006077
- [34] JAMA Intern Med. 2015 Nov;175(11):1752-1760
- [36] Europol, November 2023
- [37] Olive Oil Times, July 14, 2010
- [38] UC Davis News, September 18, 2012
- [39] UC Davis Magazine, November 30, 2016
- [40] J Am Oil Chem Soc. 2019;96(4):381-389
- [41] Molecules. 2021 Feb 20;26(4):1115
- [42] Consumer Reports, June 21, 2024
- [44] Antioxidants (Basel). 2020 Jan 16;9(1):77

- [45] Front Plant Sci. 2021;12:653997
- [46] 6th International Postharvest Symposium, Antalya, Turkey, April 8-12, 2009
- [47] UC Davis News, Super-High-Density Olive Sector Thriving in California, Study Finds
- [48] Acta Hortic. 2014;1057:619-626
- [49] ConsumerLab.com, October 12, 2026
- [50] Arch Intern Med. 2000 Mar 27;160(6):837-842
- [51] British Pharmaceutical Codex, 1911, Olea Europaea
- [52] Phytomedicine. 2011 Feb 15;18(4):251-258
- [53] PLoS One. 2013;8(3):e57622
- [54] Townsend Letter, May 2001
- [55] Explore (NY). 2022 May-Jun;18(3):287-292
- [56] Sci Rep. 2024;14:29989