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## How to Buy, Store and Eat Olive Oil



Bethany E. Blalock

Olive oil consumption in the United States has increased dramatically since the 1990's and continues to rise steadily, at least in part due to its favorable health profile. However, research has shown that Americans are not very good at distinguishing high quality from low quality oils, a fact that is perhaps not surprising given the dizzying array of options and considerable jargon encountered on the olive oil aisle at the market. Furthermore, confusion abounds regarding the proper usage of olive oil in the kitchen. This article aims to clarify the confusion and empower consumers to make more informed decisions when it comes to enjoying all the olive has to offer. Buying, storing and serving tips are provided.

### Olive Oil Consumption

Americans have been increasing their olive oil consumption since the 1990's, when the health promoting appeal of the Mediterranean diet came into vogue, displacing the low-fat mantra that dominated the preceding decades.<sup>1,2</sup> Although Italy and Spain still consume the vast majority of the world's olive oil, at 20% and 17% respectively (they also produce the lion's share), the United States is in a distant third place, at about 10% of global consumption in 2013/2014, according to data from the International Olive Council (IOC).<sup>1</sup> At over 301 metric tons, Americans have more than tripled their olive oil intake since 1990.<sup>1</sup> What is more, the rate of consumption has been increasing by an impressive 4-5% yearly since the turn of the 21<sup>st</sup> century,

while just 40% of U.S. households purchased olive oil as of 2011 – indicating enormous growth potential.

Credit for this dramatic increase in olive oil demand in the U.S. is likely due in large part to the public's association of the product with improved cardiovascular health, longevity, and the overall benefits of a Mediterranean style eating pattern.<sup>3</sup> Table 1 provides a limited nutrient profile of olive oil,<sup>4</sup> but the overall health benefits are beyond the scope of this paper and have been recently reviewed elsewhere.<sup>5</sup> Red meat (beef, pork, lamb, other mammals) and dairy products provide the bulk of dietary fat in the typical American diet, whereas the Mediterranean diet uses little of these, instead relying heavily on olive oil for fat (as well as more fish). Higher intake of polyunsaturated and monounsaturated fats in place of the saturated fats

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that predominate in animal products (and certainly the trans fats common in packaged baked goods), is associated with a decrease in low density lipoprotein (LDL) cholesterol subfractions and an overall improved coronary heart disease risk profile. And while other foods and beverages such as fish, whole grains and legumes, limited red meat, plenty of fresh fruits and vegetables, and moderate alcohol intake are also staples of the Mediterranean diet plan, a switch from butter or margarine to olive oil is probably the change that comes easiest to most Americans. This helps explain why olive oil sales continue to rise, while red meat consumption, for example, has only very recently begun to slightly decline.<sup>6</sup>

### Olive Oil Grades and Standards

Switching from butter or canola oil to olive oil seems easy enough, but choosing which kind of olive oil to buy can be another story. Many shoppers may find the array of options at their local supermarket overwhelming and the range of olive oil jargon confusing. For example, is virgin olive oil superior to “plain” olive oil? What about extra virgin? What is the difference between Spanish, Italian, and domestic olive oils? Is refined oil better or worse? What about cold pressed? Below, a primer on origins, terms, and grading sheds light on these questions.

#### Standards

In the United States, the Department of Agriculture (USDA) sets standards for grading olive oil, and the document that guides this process was last revised in 2010. At that time, the U.S. changed its definitions to line up with the standards imposed by the IOC, making it possible to more easily compare American oils to those produced in Europe and elsewhere.<sup>7</sup>

Both *extra virgin* and *virgin* olive oils are obtained using only methods that do not in any way alter the oil. For example, excessive heating and chemical refining are not permitted. The only processing these oils undergo is to remove debris, and acceptable methods include washing, decanting, centrifugation, and filtration; in other words, they are not chemically refined. Virgin and extra virgin oils are further distinguished from one another based on acidity, flavor, and fragrance: extra virgin olive oil has an acidity (as measured by oleic acid content), of no more than 0.8 gram per 100 grams of oil. Its flavor and odor must be deemed “excellent”

Table 1. Nutrient Properties of Olive Oil

| Nutrient                 | Per Tablespoon |
|--------------------------|----------------|
| Calories                 | 119 kcal       |
| Saturated fat            | 1.9 g          |
| Polyunsaturated fat      | 1.4 g          |
| Monounsaturated fat      | 9.9 g          |
| Linoleic acid            | 1318 mg        |
| $\alpha$ -Linolenic acid | 103 mg         |
| Vitamin E                | 1.94 mg        |

in sensory evaluation. Virgin olive oil, by contrast, has an acidity of no more than 2 grams per 100 grams of oil, and its flavor and odor must be “reasonably good.”

Olive oil that lacks the *virgin* designation is a blend of refined oil and virgin olive oil. It has low acidity (not more than 1%) and its fragrance and flavor must be like that of virgin olive oil. Finally, refined olive oil has been chemically treated, but still retains its fatty acid structure. It has no fragrance or flavor, and the antioxidant, alpha-tocopherol, is generally added back in to replace the naturally occurring alpha-tocopherol that is removed in the refining process.

Thus, olive oils run the gamut from flavorful and expensive to completely flavorless and relatively cheap. Any of these might be the best choice, depending on the intended use. The next section outlines how to choose correctly so that neither flavor nor money is wasted. First however, a word on regional variations in flavor and quality.

#### Region of Origin

Most olive oil is produced in Italy, Spain, and Greece. Between harvest years 2008-2014, the European Union produced over 75% of the world’s olive oil, and of that proportion, Spain produced 61%, Italy 21%, and Greece about 14%.<sup>1</sup> Like wine, olive oil has a distinct *terroir* (pronounced ter-WAHR), or flavor and aroma unique to the soil and climate in which it is grown. Characteristics such as flavor, color, and aroma vary dramatically even within countries by region, olive varietal, microclimate, and harvesting practices, so any

broad statements about, for example, “Italian olive oil” should be met with skepticism. Tasting various oils is the only way to appreciate the variation in flavor and quality. In addition, much oil that is actually grown elsewhere, such as Spain or Tunisia, is sent to Italy for bottling and then marked with the familiar phrase “Product of Italy” before it is exported to unknowing American consumers. Look for an estate name or place of harvest to be sure of where the product was actually grown. “Packaged in Italy” or “bottled in Italy” indicate the oil came from elsewhere.

Finally, oils cannot be judged based on color – greener oils have simply been harvested earlier in the growing season, when the olives are less ripe, while golden-hued oil is pressed from darker, ripe olives. However in general, greener oils tend to be grassy and peppery, while golden oils are more nutty, mild, or buttery.

**How to Buy and Store Olive Oil  
Which Standard?**

A 2013 report by the U.S. International Trade Commission found that American consumers are, generally speaking, unable to distinguish between high and low quality olive oils. Understandably, we therefore

gravitate toward cheap, poorer quality products.<sup>8</sup> This is unfortunate because it means Americans are missing out on a world of wonderful flavor, and perhaps worse, they may even be wasting money on good oils and then using them improperly. Buying practices should depend on how the oil is intended to be used or consumed. Extra virgin oils, which are minimally processed, contain many desirable “impurities” such as minerals and compounds that degrade rapidly when heated, leading to rancid, off flavors. Thus, when the bright, grassy, fruity flavors of a good olive oil matter for serving, such as for dipping bread, dressing fully cooked foods, or as a base for salad dressing, consumers should limit their search to extra virgin varieties.

On the other hand, cheaper, refined olive oils are a much more reasonable choice for cooking, especially at higher temperatures, since the refining process removes the compounds most susceptible to burning. Clarified butter provides an informative example of this process: By removing the water and other impurities and leaving only the milk fat behind, clarified butter can be heated to a much higher temperature without burning, compared to regular butter. Similarly, the smoke point (which technically refers to the point at which glycerol is converted to acrolein, an aldehyde

**Table 2. Tips for Buying and Storing Olive Oil**

| Buying  | Storing  |
|---|--|
| <ul style="list-style-type: none"> <li>• Look for opaque or dark glass containers.</li> <li>• Choose bottles toward the back of the shelf, where no direct light reaches.</li> <li>• Look for brands that have “sell-by or best-by” dates or a date of harvest – the newer the better.</li> <li>• Choose small containers that will be used up quickly.</li> <li>• Shop for oil in smaller stores where it moves quickly, rather than large supermarkets.</li> <li>• Look for brands with harvest or sell-by dates on the label.</li> <li>• Taste before buying if possible.</li> </ul> | <ul style="list-style-type: none"> <li>• Avoid transparent decanters. Wrap clear glass bottles in foil to extend shelf life.</li> <li>• Consider decanting only the volume needed for the week into a smaller bottle.</li> <li>• Store extra oil or oil used infrequently in the refrigerator in a covered or opaque container.</li> <li>• Never store oil near or over the stove. Keep it in a cool, dark pantry or cabinet.</li> </ul> |

### Type of Container

The type of container in which the oil is stored plays a role in its longevity as well. By far the most common bottle type, clear glass provides no protection from light, which is nearly as damaging as high temperature. Since light degrades tocopherols, the naturally occurring antioxidants that protect oils from rancidity, darker glass or opaque metal containers may be better options. On the other hand, tins of oil tend to come only in larger sizes, which can also be problematic because of olive oil's third enemy: oxygen. The larger the container, the more oxygen will be available to create peroxides, which in turn form compounds that negatively impact the flavor of the oil. Thus, even though buying in bulk is more cost effective, shoppers are better off purchasing only the volume of oil that they will realistically use in a few weeks, as the oil will lose its superior flavor otherwise.

### Storage

If economizing by purchasing large containers is of special consideration, or if olive oil is not commonly used in the household, consider decanting into a smaller bottle only what is needed for the week. Wrap the big bottle with foil and store it in the refrigerator. This method will protect the bulk of the supply from light and heat, though nothing can be done about the exposure to oxygen. Finally, never store olive oil, even the small "weekly" portion, over the stove, since the heat from cooking will rapidly lead to rancidity. Instead, keep all oils in a cool, dark cabinet. See Table 2 for tips on buying and storing olive oil.

### Tips for Enjoying Olive Oil

There is no wrong way to enjoy olive oil, except by overheating it and destroying the delicate flavors of virgin or extra virgin oil. Table 3 below offers a few tips on ways to incorporate olive oil into your diet.

### CONCLUSION

Olive oil has been a staple of the healthy Mediterranean style diet for centuries, while Americans have only recently caught on to its distinctive flavor and heart-healthy benefits. As such, confusion abounds when it comes to the meaning of the various olive oil standards, how to select and store it, and how to cook and serve olive oil while preserving its delicate flavor. In short, more expensive, extra virgin oils should be saved for raw purposes, while refined olive oil is appropriate for high heat cooking, even frying. Sampling different oils before buying is a great way to develop one's palette to distinguish higher quality olive oils. ■

### References

1. International Olive Council. (n.d.). World Olive Oil Figures. Retrieved June 10, 2015, from <http://www.internationaloliveoil.org/estaticos/view/131-world-olive-oil-figures>.
2. Lynch, R. A brief timeline shows how we're gluttons for diet fads. LA Times, 28 Feb 2015. <http://www.latimes.com/health/la-he-diet-timeline-20150228-story.html>.
3. Kushi, L.H. Health implications of Mediterranean diets in light of contemporary knowledge. 2. Meat, wine, fats, and oils. *Am J Clin Nutr* 1995, 61(6 Suppl):1416S-27S.
4. US Department of Agriculture, Agricultural Research Service, Nutrient Data Laboratory. USDA National Nutrient Database for Standard Reference, Release 27 (revised). Version Current: May 2015. Internet: <http://www.ars.usda.gov/ba/bhnrc/ndl>
5. Buckland, G. The role of olive oil in disease prevention: a focus on the recent epidemiological evidence from cohort studies and dietary intervention trials. *BJN* 2015, 113:S94-111.
6. United States Department of Agriculture. Food Availability Per Capita Data System. 2014. Available at: <http://www.ers.usda.gov/data-products/food-availability-%28per-capita%29-data-system/.aspx#.VC1x2CtdVPQ>.
7. United States Department of Agriculture. United States Standards for Grades of Olive Oil and Olive-Pomace Oil. 75 Federal Register 22363, 2010.
8. United States International Trade Commission. Olive Oil: Conditions of Competition between U.S. and Major Foreign Supplier Industries. Washington, D.C.: U.S. International Trade Commission, 2013.
9. The Culinary Institute of America. The Professional Chef. Hoboken, NJ: John Wiley & Sons, Inc., 2011.
10. Min, E. C. Mechanisms of Antioxidants in the Oxidation of Foods. *Comprehensive Reviews in Food Science and Food Safety* 2009, 8:345-358.
11. Jamie Ayton, R. M. (2012). The Effect of Storage Conditions on Extra Virgin Olive Oil Quality. Barton, Australia: Rural Industries Research and Development Corporation.

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