

Frequently Asked Questions about Extra Virgin Olive Oil

Permission to reproduce this document is freely granted to those wishing to promote extra virgin olive oil, provided that original authorship is clearly acknowledged. © 2009 Richard Gawel
www..aromadictionary.com

What is Extra Virgin Olive Oil?

Extra virgin (EV) olive oil is the oil extracted from fresh olives using a mechanical process without the use of excessive heat or any form of additives or solvents.

Provided that the olives are free from disease and they are processed into oil without delay using a clean mill they should produce an olive oil that has an aroma and flavour that is free of taste defects and as such is of extra virgin grade.

It should be noted that EV oils can be legitimately made without using a press. In fact most EV olive oils made in commercial relevant quantities are not made by pressing but instead by centrifugation of the paste made by crushing olives. What pressing and centrifugation have in common is that they are both mechanical processes and neither involves the use of any chemical agents.

The heat bit is more of a technical issue. You can extract more oil out of olive paste if you heat it up. However, the quality of the oil will suffer as a result. The application of some heat is necessary in order to extract commercially viable amounts of oil with good aroma and flavour. 28-30 degrees Celsius is the ideal with 32 degrees Celsius being the upper end of the temperature range used by most producers interested in quality.

What is the difference between extra virgin olive and 'pure' or 'light' olive oil?

Extra virgin olive oil is essentially the naturally extracted juice from fresh olives. The olives are crushed into a paste, and the oil is physically extracted from this paste without the use of chemicals or excessive heat. Extra virgin olive oil has a distinctive olive fruity aroma and flavour and it contains natural antioxidants. The aroma and flavour, of olive oil adds complementary flavours to a wide variety of dishes.

'Pure' and 'light' olive oils are olive oils that have been refined. Refining is a complex process that involves the use of acids, alkalis, steam and other agents. The refining process removes all of the aroma and flavour substances out of olive including its natural antioxidants. Artificial antioxidants such as butylated hydroxyanisole (BHA) and the related compound butylated hydroxytoluene (BHT) need to be added back to give the refined olive oil a reasonable shelf life. As such, unlike extra virgin olive oil, 'Pure' and 'Lite' olive oil lack the aroma, flavour and any form of bitterness and pepperyness. In fact the word 'light' only refers to the light colour, aroma and flavour of these oils.

So what is pomace olive oil?

Pomace olive oil is the cheapest grade of olive oil available on the market. The production of extra virgin olive oil results in the production of a waste material called pomace which consists of the mashed up skins, seeds and pulp of the olive minus most of the water and oil which has been removed. Due to extraction inefficiencies, the pomace contains small, albeit commercially viable amounts of olive oil. The pomace is dried by heating and the remnant oil is dissolved by using the solvent hexane. The solvent is boiled off (and re-used) to leave a crude oil called pomace oil. This oil is then refined using the same process used to produce pure and light oils. The result? A bland characterless olive oil that is low in antioxidants. The positives? Pomace is notoriously difficult to compost down so pomace heaps have the potential to contaminate surface and ground water. So processing pomace can have some environmental advantages. The negatives? The initial heating process has the potential to produce carcinogenic substances called PAH's which are not completely removed by refining.

Is it true that 'light' olive oil contains fewer calories than extra virgin oil?

Absolutely not. All olive oils (and indeed all edible oils) have almost identical energy values. The word 'light' is made in the context of them having light aroma, flavour and colour.

Should I only buy 'first cold pressed' oil?

The question is not particularly relevant in light of the way extra virgin olive oil is made today. The vast majority of extra virgin olive oil produced throughout the world is done so without using a traditional olive oil press. Nearly all extra virgin olive oil is made using high speed centrifuges which spin the lighter olive oil away from the other heavier components of the olive such as water and pulp. As such, the term as it was first coined has little relevance today. Don't believe me? 90% of mills in Spain use centrifuges and Spain is easily the worlds largest producer (even of oils labeled as being Italian) and a centrifuge can process many times the amount of paste per hour than can a press. Do the math!

Are olive oils made using the traditional method of mat pressing better than those made using the modern centrifugal process?

Absolutely not. Here is one case where the use of 'traditional' methods do not guarantee the highest quality. Most olive oil experts would agree that the modern continuous system favoured by most of the world's commercial olive producers result in more consistent defect free oils with as good or better aroma and flavour than what would be achieved by pressing with a mat press.

The reason is simple. By their nature, the mats used in traditional presses are absorbent and therefore retain oil after being used. As cleaning the mats to a near new 'spotless' standard is impractical in most larger scale commercial environments, most mats will eventually contain oil that is either rancid or has a fermented taste character. All subsequent oil produced from those same will also display these undesirable taste defects. Having said that some traditional mat producers do maintain impeccable standards, and as such the oils that they produce have pristine flavours. This is usually the case when a producer is using mat press to exclusively process their own olives. Furthermore, the modern centrifugal methods expose the olive paste and oil to less oxygen. This helps preserve the natural healthful antioxidants found in extra virgin olive oil.

For reasons of oil quality, consistency and mill efficiencies, in most of Europe and in the "new world", the continuous (centrifuge) method of extracting oil has now become standard practice to extract oils that the majority of consumers will eventually use.

But the label says "cold pressed". Surely this means that the oil has been made with a press?

Despite what the label says, it probably hasn't. Most of the world's commercial oils are made with a centrifuge the EV olive oil you purchase is likely to have been made with a centrifuge. While centrifugation is the best way to make high quality healthy olive oil, the widespread acceptance of the term "cold pressed" by the olive oil buying public means that most producers are very reluctant to discard the term in fear of losing sales. In short, removal of the words 'cold pressed' from an olive oil bottle is (currently)

commercial suicide. A number processors are now using the more correct term 'cold extracted' to reflect the use of modern processing methods. Ok, I know what you are thinking. Commercial production means large scale. Right? Well no. In both the world's largest producer (with over 1,000,000 tonnes) and Australia (12,000 tonnes) and the US (1,000 tonnes), centrifuges dominate. Over 80% of processing plants in Spain comprise modern 2 phase centrifuges. Higher in Australia and the US. Yes, Italy is still has a large number of presses but the oils made by them are rarely found outside Italy (or indeed the region where they are made). It's almost certain that any Italian olive oil you can purchase in a supermarket is extracted using a centrifuge.

Aren't extra virgin olive oils supposed to be good for my health?

Most extra virgin olive oils naturally contain higher levels of monounsaturated fats and antioxidants such as polyphenols and tocopherol. They also naturally contain plant sterols which are thought to lower cholesterol levels. All these attributes are sought after by the health conscious.

Does centrifugation produce oils that are less beneficial to your health?

No. Quite the contrary. The process of centrifugation is by nature, a rapid and enclosed process which protects the oil from oxygen during the separation process. This means that the naturally occurring antioxidants in the oil are conserved and end up in the olive oil bottle. No rocket science here. If you expose the health giving antioxidants in olive oil to oxygen before they are bottled, i.e. during their making, then they by definition are used up. Better to have them in the bottle so they can help you stay healthy.

Does the term extra virgin necessarily imply that it is an outstanding oil?

You may find this surprising but the answer is no. Throughout the world, the term extra virgin implies that the oil is 100% made from olives, is free of unpleasant flavours and has some degree of fruitiness. That is, the label 'extra virgin' is simply a reasonable guarantee that the oils will add something positive to your food. Obviously within this broad specification there exist rather bland extra virgin oils right through to very complex oils with outstanding aroma and flavour.

Some producers state that their oils are robust or mild or fruity. What does this mean?

They are referring to the style of oil that is in the bottle. Robust oils, have strong bitterness and/or pungency (pepper), and as they are usually made from greener olives, typically (but not always) display herbaceous aromas and flavours. Mild oils on the other hand by definition have low bitterness and pungency.

Mild oils are best used on delicately flavoured foods such as on white fish and mayonnaise, while robust oils better complement strongly flavoured foods such as roast meats and flavoursome soups. When it comes to bread dipping, either can be used, but most people have a personal preference for one style over another.

The term 'fruity' is more of a marketing rather than style term. That is, an oil can be fruity, but represent either a mild, medium or robust style.

What is the significance of a high monounsaturated fat level in olive oil?

Firstly, olive oils are typified by their high level of monounsaturated fats compared with nearly all other edible oils. Monounsaturates are preferred by the health conscious. Oils high in monounsaturates are also more resistant to oxidation and as such have a longer shelf lives. Incidentally, the major monounsaturated fat in olive oils is oleic acid. Extra virgin olive oils contain between 65% and 85% oleic acid. As a result of selective breeding, some sunflower and canola oils also contain high levels of oleic acid. But these have no aroma, flavour or health giving antioxidants as they are refined oils. EV olive oil is the only high monounsaturated oil that makes your food taste better.

Extra virgin olive oil contains less omega three fats than say flaxseed oil. Is this true?

Yes it is, but.... omega three fatty acids are in the family of polyunsaturated fats. These fats are very prone to oxidation, so oils high in these fats tend to have very short shelf lives unless they are protected with artificial preservatives such as BHA and BHT. Also being refined seed oils they completely lack the aroma, flavour or health giving properties that arise from the polyphenols that are naturally found in extra virgin olive oil.

Does the colour of the olive oil say anything about its quality?

Not quality, but it can tell you other things. The colour of an olive oil is related to the amount of chlorophyll it contains. Olives are picked early in the season tend to make green coloured oil as they contain higher levels of chlorophyll. Olives harvested late in the season will typically produce more golden coloured oils due to a higher level of natural occurring levels of carotene like substances. Both oils may be technically equivalent in quality but very different in style. There are also many examples of green coloured oils that taste remarkably ripe, and golden oils that have strong grassy herbal characters. To make matters more complex, many strongly green coloured oils will turn a more golden colour when stored. So don't place too much emphasis on colour. Incidentally if you purchase a very green looking oil make sure that it is stored in a dark bottle in a dark place. The stuff that makes it green (chlorophyll) helps start the reaction that makes oils rancid, but only in the presence of light.

Some labels make a point of saying that the olive oil was made within a short period of time after harvesting. What is the significance of this claim?

One of the most critical factors in making high quality olive oil is the time that elapses between harvesting the olive and extracting its oil. The greater the elapsed time, the higher the probability that the resultant oil will have an off flavour. The defects that can arise from delays in harvesting are called fusty, musty, and winey. Ideally, olives should be processed into oil within 24 hours after harvesting.

Olive oils are packaged in different coloured bottles. Does this make a difference?

A big difference. Light is the enemy of olive oil as it is one of the factors which causes rancidity. You should always purchase oils stored in dark opaque glass. Some producers package their oils in clear bottles. This is mainly to attract the buyer. Storing olive oil in clear bottles is detrimental to its quality.

Some olive oils are cloudy. Are these better for me?

The cloudiness arises from small particles of olive that remain after processing. These particles do not convey any additional health benefits. Cloudy olive oils on the other hand generally have shorter shelf lives and if the cloudiness settles into the base of the bottle, the resultant sediment can cause off characters to be formed. Incidentally, most clear oils get that way not by being filtered but simply by the producer allowing the oil to settle naturally in tank under the force of gravity. The clear oil is removed from the sediment at the bottom of the tank and bottled.

How are flavoured olive oils made?

The way they are made in part depends on the flavour type. The most commonly encountered flavoured olive oils are of the citrus type. These can be made either by 1) adding citrus skins to the olives and crushing them together before extracting the oil, 2) by adding skins to the oil after it has been extracted and letting the citrus flavours infuse out into the oil or 3) by adding food grade citrus oils to the olive oil. The first method is called agramato and makes the best oils as they have natural flavours that typically meld well with the flavour of the olive oil base. Most other types of flavoured oils are made by the infusion process.

Occasionally one sees bottles of olive oil with fresh herbs or garlic in them. These should not be available for sale as consumption of these oils could cause botulism (which can be fatal). The use of dried herbs and garlic is an acceptable practice.

What do I look for in a retailer of extra virgin olive oil?

A good retailer knows the oils he or she stocks, and most importantly sees the use of olive oil as an important part of the entire European culinary experience. Good merchants should be able to advise you on the right style of extra virgin olive oil for your intended use, be able to recommend good examples of that style, have a high turnover, and ideally only stock new seasons oils.

Not surprisingly, reputable oil producers like dealing with reputable merchants. This relationship often means that an oil producer will voluntarily replace last seasons stock with their new seasons oils to ensure that the customer gets the best produce available. Yes, it does happen.... but not in supermarkets!

There are so many extra virgin olive oils to choose from. What do I look for?

First and foremost, consider purchasing an extra virgin olive oil that is useful for the culinary purposes you have in mind.

Extra virgin olive oils can be intensely flavoured and can also be strongly bitter and pungent. Many 'early harvest' styles fit in this category. Others can be very fruity with only hints of bitterness and pepper, while 'late harvest' styles are typically mild with very ripe fruity flavours.

As a general rule, oils with a strong flavour suit strongly flavoured dishes, and mild oils are used in dishes which are delicately flavoured. This guide provides descriptions that emphasise oil style, so it should be of help when making your purchase decision. Alternatively, ask your merchant or the producer.

Secondly, choose to buy the current season oils as these will be the freshest. Not all will have the year of harvest clearly marked. However, reputable producers and retailers will direct you to their new season oils.

Finally if in any doubt, either consult this guide or speak to your merchant. Better still, why not contact the oil maker. Most are more than happy to help and answer questions regarding their oils, and olive oil in general.

What is the difference between early and late harvest oils?

They are simply different styles of olive oil. As their name suggests, early harvest oils are made from olives picked earlier in the season. As they are made from greener olives, early harvest styles are usually more grassy/herbaceous in aroma and flavour and have higher levels of bitterness and pepperyness. Late harvest styles are usually milder oils and display riper fruit flavours. Due to their different taste properties the two styles of oil are used in different ways in the kitchen.

Why are the European extra virgin olive oils found in the supermarket generally cheaper than most Australian and American oils?

Two reasons. Firstly, the European industry has greater economies of scale, but also the production of olive oil in Europe is subsidised by the European Union. Australian and American producers do not receive direct financial assistance from their government to produce olive oil.

The term extra virgin also only implies that the oil is free of defects and has an olive like fruitiness. So within this broad specification there is room for a wide range of qualities. So, a typical imported extra virgin oil bought in a supermarket costing \$6 will in all probability be lower in quality than a top \$25 Australian or Californian olive oil. This is despite the fact that they both have legitimate extra virgin status.

The bottom line is simple. Just don't assume that all olive oils labeled Extra Virgin are equally good. They aren't. Taste for yourself and focus on freshness and flavour. Then make up your own mind.

What does Free Fatty Acidity (FFA) mean? Is it good or bad?

Free fatty acidity is chemical parameter of the oil which is a very broad indicator of its quality, or at least how sound the olives were and how carefully the olive were processed. For extra virgin olive oils, it ranges from 0 to 0.8%, with the *lower the percentage the better*. The average FFA of Australian oils in 2008 was around 0.25%, with very few even being over 0.5%.

From a practical point of view, oils with lower FFA's begin to smoke at a higher temperature when heated. This property makes them a little more versatile in the kitchen. Oils with high free fatty acidity also tend to go rancid more rapidly. However, whatever the acidity of the oil, it can't be tasted as the acids in olive oil are very weak acids.

How do I interpret the "best by" date on Australian and European oils?

Australian olive oil producers are now obliged to put a 'best by' date on their olive oils. However, it is left up to the discretion of the producer to specify the date (except where they are participants in the voluntary industry code of practice – see below). Their decision is usually based on historical knowledge of the longevity of oils, as well as on reasonable commercial considerations. It is far better to select oils that clearly state the year, and preferably month, of production. Provided the oil has been properly stored, it should be more than fit for its intended use for at least 12 months.

Incidentally, as European oils are bound the conventions of the International Olive Oil Council, they have different rules regarding 'best by' dates. These oils display 'best by' dates which are a maximum of two years after the date that the oil was packed – not made. Remember, this may or may not mean that the oil was extracted from the olive two years before the 'best by' date, as the oil may have been in tank for some years before it was bottled.

In 2008 the Australian industry introduced a voluntary code of practice whereby oil producers who subscribe to the code base the 'best by' date on an objective laboratory measure called the rancimat test. The results of this test allows producers to obtain an estimate the lifespan of the oil and advise consumers appropriately. Compare this to the arbitrary nature of the European system!

How can Australian and American oils be as good as the European ones given that the European producers have hundreds of years of experience on their side?

This is an old chestnut. Not many people are aware that the continuous method of olive oil extraction used to produce the vast majority of the world's olive oil today has only been in widespread use since the early 1970's. Furthermore, the new and favoured 'two phase' technology has only been commercially available since 1992. As such, the experience gap between European and other new world producers is not as wide as some would think. Furthermore, the extraction of oil from olives is a relatively straightforward process involving only a couple of critical steps. These are very well known and understood. Most, if not all new world olive oil producers know that if you use undamaged olives, process them quickly after picking, employ the services of a spotlessly clean mill, and don't strive for excessive extraction then sound quality olive oil will result.

Try as many examples of each as you can, preferably without knowing what you are tasting. You can then make up your own mind about the relative qualities of New World and European oils.

Where is the best place to store the extra virgin olive oil?

A general principle applies here. Both light and heat are the enemies of olive oil. As such, olive oils should be stored in a cool dark place. Most also refrigerate well. On the other side of the coin, the worst place to store olive oil is on top of the refrigerator or next to the oven where they may become heated, or even worse on a window sill. Olive oils will rapidly become rancid if stored in a warm, well lit environment. Exposure to light also hastens the loss of the health giving vitamin E like compound tocopherol.

Are extra virgin olive oils harmed by refrigerating them?

No. Quite the contrary, refrigeration is a very effective way of prolonging the shelf life of the oil. Some oils may partially solidify due to the oil containing naturally occurring levels of saturated fats and/or waxes. Even if they solidify, they will return to their normal state when they warm to room temperature. The aroma and flavour of the olive oil should not be affected in any way by refrigeration. However storing in a cool dark place is the best place to store olive oil if you frequently use small amounts of olive oil over a long period of time as there is some recent research suggests that constantly thawing oils marginally reduces their shelf life. However it beats storing on a window sill any time!

How long can I expect my extra virgin olive oil to last?

Extra virgin olive oils are best consumed young as it is at this time when their fresh olive like aromas and flavours, and the health giving polyphenols are at their peak. *Unlike wine, olive oils do not get better with age*, so the closer to their release date that you purchase and use them, the better. However, the higher levels of natural antioxidants and the higher proportion of monounsaturated fats generally found in extra virgin olive oil mean that they generally remain fresher longer than other edible oils.

Mild styles of oil contain lower levels of polyphenols so they tend to have shorter shelf lives. However as a guide, provided they are stored properly, the majority of current season extra virgin olive oils will retain good flavour, aroma and freshness for at least 12 months.

Can I use extra virgin olive oils for frying?

Yes, but to be honest, refined olive oils (that is those labeled as 'Pure' or 'Light') are probably a more cost effective alternative when more than shallow frying. Refined olive oils also begin to smoke at a higher temperature than most extra virgin olive oils, making them more suited to deep frying. However, extra virgin olive oils are a far better alternative when shallow frying.

It is commonly thought that extra virgin olive oil smokes at a low temperature. However, it is a fact that the lower the free fatty acidity (FFA) the higher the temperature at which the oil will begin to smoke. Therefore if you purchase high quality oil with an FFA less than 0.2%, then it will start to smoke at a temperature around 20C higher than your average supermarket EV imported from the EU. That's a lot in culinary terms.

Can I reuse olive oil?

Yes, extra virgin olive oils can be reused a few times. However, keep in mind that each time an oil is heated and cooled it will lose some of its aroma, flavour, freshness and health giving polyphenols and tocopherol. Recent research has also shown that olive oils heated by microwaving retain their natural polyphenols to a much greater extent compared with traditional heating methods. However, recent research has shown that the important anti-oxidant called oleocanthal loses its anti-inflammatory activity under even mild short term heating.

Do trans fats form in olive oil when it is heated?

No they don't. Trans fats form when any edible oil is subjected to an industrial process called hydrogenation designed to turn liquid oil into an edible fat that is solid at room temperature – that is margarine. The hydrogenation process involves heating up oil under extreme pressure and then bubbling hydrogen gas through it in the presence of a Palladium metal catalyst. For trans fats to form all of these conditions must be in place – heat and pressure and hydrogen gas and an appropriate catalyst. It just can't happen in your kitchen. The vast majority of trans-fats in the average persons diet arise from fast foods, cheap margarines, or more commonly commercial baked products and crackers.