

BALSAMIC VINEGAR

Originated from Italy, this condiment is an aromatic, thick, dark, syrup-like aged type of vinegar, prepared by the reduction of cooked grapes. Balsamic vinegar, though popularly referred to as wine vinegar, is not made from wine, but is prepared from grape pressings, whose fermentation process has been hindered. The best balsamic vinegar is prepared in the hills of Modena, in Italy, where unique and flavorful balsamic vinegar is formed. This vinegar is known to be a cut above the other types of vinegar. Unlike the sharp taste of vinegar, balsamic vinegar has a rich, sweet flavor. You need to taste it to believe it!

Italians have been relishing balsamic vinegar for centuries, however, the American palate has been able to savor this only since the past two decades. Today balsamic vinegar is one of the most popular condiments available in American grocery stores and is used in various sauces, marinades, salad dressings, dips, desserts, etc. The popularity surge of this dark, syrup-like condiment is not only because of its remarkable taste, but balsamic vinegar health benefits also play a major role in adding points to the popularity chart.

Health Benefits of Balsamic Vinegar

Balsamic vinegar retains most of the nutrients present in the parent grapes and comprises nutrients like iron, calcium, potassium, manganese, phosphorus and magnesium in adequate amounts. Thus, incorporating balsamic in the daily diet will benefit one immensely. Let us look at the different balsamic vinegar health benefits.

Antioxidant Properties

Oxidation reactions taking place in the human body to produce energy, conduce to formation of cell damaging free radicals as natural by-products. Free radicals damage cell membranes and manifest themselves in terms of premature aging, hardening of arterial walls and cancer. Antioxidants from balsamic vinegar destroy these free radicals and prevent cells from being destroyed.

Fights Cancer

The grapes from which balsamic vinegar is formed is known to contain a bioflavonoid called quercetin, which has antioxidant properties. Along with vitamin C, this antioxidant strengthens the immune system to fight cancer and other infectious diseases and inflammations. Balsamic vinegar also contains polyphenols which are anticancer agents.

Reduces Risks of Heart Attacks

Balsamic vinegar is low in saturated fat and is believed to reduce cholesterol. Moreover, since it is low in sodium, it enhances heart health and reduces high blood pressure.

Controls Diabetes

Research reveals that consumption of at least 5 teaspoons of balsamic vinegar a day enhances insulin sensitivity. The greater the insulin sensitivity, the better the diabetes control.

Natural Pain Reliever

In ancient times, folk healers used this vinegar to relieve people of their body pain. Moreover, they also used balsamic vinegar to treat wounds and infections. The anti-bacterial and anti-viral properties in the vinegar healed wounds.

Assists Digestion

The polyphenols in balsamic vinegar stimulate the activity of pepsin enzyme in the body. Pepsin is a digestive enzyme, which helps break proteins into smaller units (amino acids). Moreover, these polyphenols also assist the intestine in absorbing amino acids expeditiously. Efficient amino acid absorption enables the body to utilize it for cell building, repair and other body maintenance work. Thus, balsamic vinegar aids the digestion process.

Besides these balsamic vinegar health benefits, this vinegar also reduces the frequency of headache inceptions, strengthens bones (calcium absorption), energizes the body, slows down aging process and prevents anemia. It also helps in weight loss by suppressing one's appetite. Authentic balsamic vinegar would have been aged for a minimum period of 3 years to a //maximum period of 100 years. The longer the aging process, finer the vinegar quality.

Olive Oil

Free Fatty Acids - FFA

Indicates the condition of the olives at time of crush! Healthy fruit, processed immediately should produce oil with low FFA!

The lower, the better! An oil with a low (FFA) will have a higher smoke point than an oil with a higher FFA.

The IOC requires that this number be below 0.8 in order for an olive oil to be considered Extra Virgin grade.

Peroxide Value – PV

This number must be equal to or less than 20. This is the primary measurement of the rancidity of a particular extra virgin olive oil. Peroxide value is affected by procedures used in processing and storing of the oil. Peroxide is responsible for color and aroma changes as the oil oxidizes.

Oleic Acid

Oleic Acid- A higher level is better! Oleic acid is responsible for some of the health benefits of EVOO, and its high resistance to free radicals helps to slow down the spread of damaging chemical chain-reactions. Because of its high degree of resistance to attack by oxygen free radicals, higher levels of oleic acid in an olive oil help keep it fresher for longer, by preventing the formation of peroxidized (rancid) fats.

Our bodies absorb any peroxidized fats that we consume and incorporate them into our cells. Oleic acid's superior resistance to free radical attacks protects our cell membranes, proteins, and DNA from being damaged, as it protects the oil from spoiling.

Substituting oleic acid for saturated fatty acids in animal fats improves cholesterol balance,^[i] and research also suggests that oleic acid may have more specific health benefits, such as the ability to help regulate healthy blood pressure by altering cellular signaling.^{[ii],[iii],[iv],[v]} For these and other reasons, the US FDA has approved the health claim that “Limited and not conclusive scientific evidence suggests that eating about 2 tablespoons (23 grams) of olive oil daily may reduce the risk of coronary heart disease due to the monounsaturated fat in olive oil.”

Biophenols Profile

As science developed, we have learned that a significant amount of health attributes related to extra virgin olive oil are not only linked to its profile rich in monounsaturated fatty acids but also to its biophenol content. In the early days, total biophenol content was simply measured by measuring the reaction of this complex group of substances with a colorant (Folin-Ciocalteu).

The darker the blue colour developed from the reaction, the higher the level of biophenols. The actual level of biophenols was determined by a comparative scale measuring how much colour was developed by known quantities of a standard phenol (either caffeic acid or gallic acid). Even when this method provided a reasonable indication, it was far from perfect as all different phenols react to the colorant in different ways. Furthermore, it did not tell us anything about the different groups of biophenols. As we know now, some of those biophenols have very specific health and sensory properties (i.e. Oleocanthal, which has important anti-inflammatory action and it is responsible for the pungent feeling on the back of the throat).

Even when there are no limit for polyphenols in international standards, they are very effective antioxidants in olive oil and contribute significantly to oxidative stability, shelf life and health claims. Given the growing importance of these antioxidants, a new and more precise measuring method has been developed. This method utilises High Performance Liquid Chromatography (HPLC). High Performance Liquid Chromatography (HPLC) is a form of column chromatography that pumps a sample mixture or analyte (in this case EVOO) in a solvent (known as the mobile phase) at high pressure through a column with chromatographic packing material (stationary phase). The sample is carried by a moving carrier gas stream of helium or nitrogen. HPLC has the ability to separate, and identify compounds that are present in any sample that can be dissolved in a liquid in trace concentrations as low as parts per trillion. Sample retention time (the time that it takes for each biophenol to exit the column) will vary depending on the interaction between the stationary phase, the molecules being analyzed, and the solvent, or solvents used. As the sample passes through the column it interacts between the two phases at different rate, primarily due to different polarities in the analytes. Analytes that have the least amount of interaction with the stationary phase or the most amount of interaction with the mobile phase will exit the column faster. A detector at the point of exit determines when and how much of each biophenol is sensed. The total amount of biophenols in this method is determined by adding the individual quantities of each measured biophenol.

There are typically more than 20 different biophenols in extra virgin olive oil. The prevalent classes of hydrophilic phenols found in EVOO are phenolic alcohols and acids (i.e. Hydroxytyrosol and vanillic acid), flavonoids (i.e. luteonin), lignans (i.e. pinoresinol) and secoiridoids. Among these substances the last two classes include the most concentrate phenols of EVOO. Secoiridoids, like aglycone derivatives of oleuropein, demethyloleuropein and ligstroside, are present in olive fruit as most abundant EVOO phenolic antioxidants. Several important biological properties (antioxidant, anti-inflammatory, chemopreventive and anti-cancer) and the characteristic pungent and bitter tasty properties have been attributed to EVOO phenols.

Phenols extend the shelf-life of extra virgin olive oil & also determine the “style” in terms of bitterness and pungency. Generally, when an oil has a high phenol count (presented in parts per million), it will have more “pepper” or more “bitterness”. Many consider phenols to be free-radical “scavengers”.

Studies show a dose-dependent & significant effect of olive oil Phenol consumption (for 3 weeks) on appropriate markers of LDL peroxidation

(European Food Safety Authority) “Consumption of olive oil phenols contributes to the protection of blood lipids from oxidative damage.”

Religiously consumed by the "Life Extension Community" and have been featured in several recent health studies!

Alpha-tocopherols are Pro-Vitamin E compounds that are essential in the control of LDL that generates cholesterol.

DAGs (Diacylglycerols)

DAGs are always reported & presented in the 1,2 ratio (as a percentage of total DAGs) as the oil ages, the 1,2 DAGs are transformed to 1,3 DAGs

Fresh Olive Oil made from sound fruit should result in a DAG content of 85% or higher whereas the processing of rotten and or fermented olives will produce fresh oil with low DAGs indicating a very short shelf-life.

DAGs typically drop between 20-30% per year depending on storage conditions and FFA. They are highly influenced by heat but not light.

DAGs are important shelf-life indicators and can be used to determine the shelf life (or lack thereof) of an oil at any time in its life.

Recent studies show that many grocery store oils fail DAGs (35% is considered falling in the voluntary Australian standard) which shows a high correlation with sensory defects, more so than any other test.

The degradation of DAGs (rate) are highly predictable over time if initial quality (FFA) is known and storage conditions.

(PPP) Pyropheophytin A

Chlorophyll degradation Products in Olive Oil

Most sensitive method (ratio) able to detect the presence of deodorized (soft-column refined, thermally treated) oils

Recent studies show that many grocery store oils fail PPP (17% is considered falling in the voluntary Australian standard)

Freshly made oil should have a PPP of close to zero.

Soft column refining is generally used to strip out sensory defects and otherwise neutralize some chemical parameters in old oils or oils made from over-ripe and fermented (late season) olives so that they can pass typical authenticity tests, undetected.

PPP are highly influenced by heat and then also by light.

In ideal storage conditions, they should only increase between 6-8% per year! An oil with an extremely high PPP is a clear indication that “something” is wrong or amiss. Either the oil is severely aged, deodorized or has had continuous light exposure (clear packaging!) for extended time periods and/or higher than normal storage temperatures.

A-Tocopherals

A nutrient that the body needs in small amounts to stay healthy and work the way it should. It is fat-soluble (can dissolve in fats and oils) and is found in seeds, nuts, leafy green vegetables, and vegetable oils. Alpha-tocopherol boosts the immune system and helps keep blood clots from forming. It also helps prevent cell damage caused by free radicals (highly reactive chemicals). Alpha-tocopherol is being studied in the prevention and treatment of some types of cancer. It is a type of antioxidant. Also called vitamin E.

Squalene

Squalene is a natural organic compound which is part of our tissues. It is a polyunsaturated hydrocarbon, its molecular structure resembles that of vitamin E. However Squalene contains four additional groups of isoprenoids, which are very potent natural antioxidants