



Department of
Primary Industries

POLYPHENOLS

Olive oil is a unique product. Understanding the chemical profile of the oil is important in determining the quality of the product.

Polyphenols are a group of compounds which are present in extra virgin olive oil which act as antioxidants, thereby increasing the shelf life of the oil, while also contributing to the sensory characteristics of the oil, especially bitterness and pungency.

The amount of polyphenols present in olive oil is dependent on many factors, including variety, fruit maturity, harvest time, processing technology, grove management and climate. Storage conditions of the oil can also have an effect on the amount and type of polyphenols present in the oil.

There are no set limits in the Australian or IOC standards for polyphenol content. As a general rule most Australian oils have a polyphenol content between 50 and 400 mg/kg oil (measured as caffeic acid). Robust oils tend to have higher polyphenol contents, while medium and mild oils have lower polyphenol contents.



Your first choice for analysis you can trust.

Olive Oil Testing Service
Locked Bag 700
Wagga Wagga NSW 2650

For more information contact
1800 675 623 or 02 6938 1957
wagga.csu@dpi.nsw.gov.au

www.dpi.nsw.gov.au



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PEROXIDE VALUE

Olive oil is a unique product. Understanding the chemical profile of the oil is important in determining the quality of the product.

Peroxide value (PV) is an important test which growers should carry out on each batch of oil. This test is an important indicator of storage conditions of the oil, which measures chemical products which are produced through reactions with the oil and oxygen which ultimately cause sensory defects, namely rancidity.

Peroxide value is the primary measurement of oxidation in oil and gives an idea of oils' freshness and storage conditions.

Factors which can increase the peroxide value in olive oil include exposure to oxygen, high temperatures, and visible light. To ensure peroxide values are kept as low as possible, oil should be stored in cool, inert vessels, such as stainless steel or glass, away from light. Displacement of oxygen in containers with an inert gas, such as nitrogen, also helps to stop oxidation of the oil.

Australian and IOC standards indicate the peroxide value should be below 20mEq oxygen/kg oil for an oil to be classified as extra virgin olive oil.



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FREE FATTY ACIDS

Olive oil is a unique product. Understanding the chemical profile of the oil is important in determining the quality of the product.

Free fatty acids (FFA) content (expressed as %) is an important parameter in the classification of olive oil. This test provides a good indication of the quality of the oil, the condition of the fruit prior to harvesting, the quality of the processing of the fruit and the storage conditions of the oil.

The presence of free fatty acids leads to the formation of more free fatty acids in the oil; that is, they act as catalysts for the further production of free fatty acids. The level of increase is significantly affected by storage conditions, especially increased storage temperatures.

The IOC and Australian standards indicate the free fatty acid content in extra virgin olive oil should be below 0.8%.



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UV ABSORPTION

Olive oil is a unique product. Understanding the chemical profile of the oil is important in determining the quality of the product.

UV absorption identifies oils which are old or which have been refined. This test measures changes in the structure of fatty acids, something which occurs due to ageing, heating or refining of oil. The test may be used to ensure oil is relatively fresh and is not adulterated with refined oil.

Measurements are made in the UV region of the spectrum, specifically at 232, 264, 268 and 272nm. This information is then used to determine DK, K232 and K268 (K268 sometimes reported as K270, based on solvent used for the test).

Australian and IOC standards indicate K232 should be below 2.50, K268 should be below 0.22 and DK should be +/-0.01 for extra virgin olive oil classification. Values outside these limits indicate advanced oxidation, or adulteration.



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