

Total Polyphenols Direct

Quantitative Determination of total polyphenols in edible oils, wine and food

MenidiMedica

Biotechnology Applications

For further safety instructions, refer to the Safety Data Sheet (SDS).

Notes

A 4-level calibration kit is available by MenidiMedica Biotech Greece.

Recommended for calibration on automatic instruments.

Bibliography

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REF 89001 - 50 tests



24 months, storage at 2-8°C

Description

The antioxidant capacity of polyphenols plays an important role in the stability of olive oil, as there is a correlation between the amount of total polyphenols and resistance to oxidation. Polyphenols have a protective effect on the cells of the human body because they oppose the negative effects of free radicals. These polyphenols in olive oil act as natural antioxidants. The amount of polyphenols decreases during olive oil extraction, so the test can be used to optimize the processing.

Olive oil is rich in polyphenols, which form its "polar fraction" and prevent its self-oxidation, thus giving it its excellent thermal stability and contributing to its characteristic aroma and taste. The main ones are: tyrosol, hydroxytyrosol, oleuropein and protocatechuic, gallic, vanillic, vanillic, p-hydroxybenzoic, syringic, 4-hydroxyphenyl acetate, o-mavanillic, quinamic, o-coumaric, p-coumaric, caffeic, ferulic and sinocoumaric acids. The main antioxidants of olive oil are considered to be tocopherols, the main representative being alpha-tocopherol, and phenolic compounds.

Vitamin E with its parent compound tocol consists of two series of compounds: tocopherols and tocotrienols. The tocopherols are divided into a-tocopherol, b-tocopherol, c-tocopherol, and d-tocopherol, while the tocotrienols are divided into a-, b-, c-, and d-tocotrienol. The total biological activity of vitamin E is mainly due to the presence of α -tocopherol. It is the alpha-tocopherol that exerts the greatest biological activity in the human body and is the reference for the action of the other forms of vitamin E.

All tocopherols are natural antioxidants of oils, since they have an antioxidant activity that increases from a to d. The stability of olive oil to oxidation is largely due to the presence of tocopherols, which are easily oxidised.

A-tocopherol is traditionally considered the main antioxidant in olive oil. It constitutes about 90% of all tocopherols and normally ranges from 100 to 300 ppm (Blekas et al., 1995; Psomiadou and Tsimidou, 1998). c-Tocopherol constitutes about 8% of all tocopherols in olive oil, while b-, d-tocopherols are only present in trace amounts (Andrikopoulos et al., 1989). Vitamin E is an important natural antioxidant of oils, since it inhibits the oxidation of their fatty substances (triglycerides), and protects olive oil from peroxidation and the free radical propagation mechanism.

Package contents: 1 x 5 ml R1a, 3 x 17 ml R1b, 1 x 7.5 ml R2

Number of tests 50 tests

Ref. : 89001

Shelf life: 24 months from date of manufacture

Storage & Stability: 2-8°C

Sample collection instructions

No preparation of olive oil sample is required.

Preparation of reagents

*WR1: Mix 100 μ l R1a with 1000 μ l R1b and shake gently for 3 seconds

R1a - Mixing with R1b is required

R1b - Mixing with R1a is required

R2 - Ready for use

Procedure

- Wavelength: 700 nm on the Electra m2 Unified Analyzer

- Temperature: 300C (250C - 370C)

- Method: FIXED TIME

- Fitting: LINEAR

- Select the T.PPS parameter from the test menu

- ZERO: WR1 500 uL. + 10 uL. deionized water, Press OK.

- ADD REAGENT R1 : WR1: 500 uL. Press OK.

- ADD SAMPLE: 10 uL.Press OK.

- Wait 180 seconds.

- Measurement of absorbance A1. ADD REAGENT R2: 150 uL. Press OK.

- Wait 300 seconds.

- Absorbance measurement A2.

DA = A2-A1 (total polyphenol concentration expressed in mg/l.)

Note: A 5-point calibration of 0, 125, 250, 500, 1000 (mg/l) is recommended.

Reference values

Linearity: 0-1000 mg/l.

Note: For samples that the analyzer gives you an UPPER LIMIT value, then you should dilute your sample with OLIVE OIL DILUTOR (Ref. 89377, sold separately by MenidiMedica Biotech Greece) in a ratio of 1:1 or 1:5 and multiply the result given by the analyzer by 1 or 5.

Safety measures

The components of clean morian polyphenols pose no health risk when used in accordance with standard laboratory practices and the procedures in this insert.