

Poster Presentations

Analysis of Palestinian Olive Oil of Different Storage Ages by Fluorescence Spectroscopy Technique

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Abstract

This work focuses on the effect of storage age of Palestinian olive oil on the emission and absorption wavelengths using the fluorescence spectroscopy technique. In addition, the effect of storage age of olive oil on the physical properties: viscosity, refractive index, acidity, and mass density are investigated.

The olive oil sample which has different storage ages (3, 5, 16 and 17 years) has maximum emitted wavelengths ranged from 348.0 nm – 349.0 nm, 441.5 nm – 465.5 nm and 647.5 nm – 677.5 nm.

The emission bands ranged from 328.5 nm – 357.0 nm, 357.0 nm – 633.0 nm and 633.0 nm – 754.5 nm.

The viscosity for the sample of 3 years storage age at 25°C is 58.1 cP. The value of the refractive index, the acidity (FFA%) and the mass density are 1.4671, 2.32 and 0.90948 gm/cm³.

Some of vitamin E components (α -, β -, δ - and γ -tocopherol), and some of phenolic compounds (gallic acid, p-coumaric acid, o-coumaric, cinnamic acid, tyrosol and caffeic acid) in stored olive oil for more than 3 years showed an increase as the storage age increases. Some of vitamin E components (α -, β -, δ - and γ -tocotrienol), and some of phenolic compounds (vanillic acid and syringic acid) and chlorophyll a and b, pheophytin a and b in stored olive oil for more than 3 years showed a decrease as the storage age increases.

The viscosity, refractive index and mass density of olive oil samples at different storage ages decreases as the storage age increases, whereas the acidity increases as the storage age increases. The measured viscosity, refractive index, acidity and mass density of olive oil samples of storage age more than 5 years do not agree with the standard values.

The recommended olive oil of storage age less than 5 years is considered as an edible olive oil.