Quality Assessment of Oil from Olive Trees Irrigated by Waste Water Using Fluorescence Spectroscopy

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Abstract

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

The results indicate three bands, first band (360-430) nm for olive oil sample irrigated by rain water contains vitamin E and phenols more than other samples, the second band (450-590) nm for olive oil sample irrigated by reclaimed waste water contains oxidized products from vitamin E more than other samples, and the third band of olive oil samples irrigated by rain water contains chlorophylls more than others, the chlorophyll decreases when irrigation with waste water or reclaimed waste water. In addition the acidity increases for samples with trees irrigated by waste water which can be classified as Lampante oil. The experimental results of viscosity showed that the viscosity increased for all samples that were irrigated by waste water of crop 2014.

This study is the first time to be conducted in Palestine. It gives an indication about the quality assessment of oil from olive trees irrigated by waste water using fluorescence spectroscopy**.**