شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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بعض الوثائق الأصلية تالفة

بالرسالة صفحات لم ترد بالأصل

El-Menoufia University
Faculty of Science
Chemistry Department

Studies on Chemical Composition of Olive Oil and Mill Waste water

A thesis Submitted
TO
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BY

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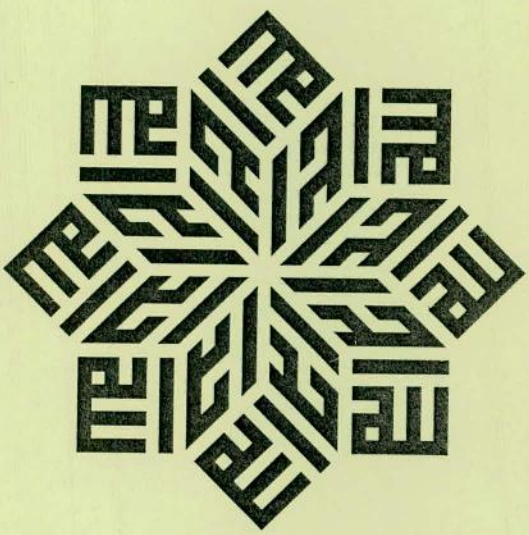
ربك نستعين

وما اوتيتم من العلم الإقليلا



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SUMMARY

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The purpose of this work is to evaluate the development of chemical composition of olives during maturation. We can summarize the results obtained in the following points :

1) Chemical composition of the three olive fruits (Cairo 7, Frantoio and Arbequina) such as. moisture 52.32%, 38.31% and 47.06% , ash 1.38%. 4% and 3.38%, oil 23.52%. 31.16% and 26.95%, protein 2.07%. 9.55% and 8.55% and carbohydrate 0.06% , 0.08% and 0.06%.

2) Chemical and physical properties of olive oil extracted from three unripe olive varieties (Cairo 7, Farantcio and Arbequnia) such as, acid value (0.160. 0.118, 0.229), peroxide value (13.015, 8.756, 8.880), iodine value (83.75, 87.76. 85.97), saponification value (181.33, 182.43, 183.48), unsaponifable matter % (1.737%, 1.523%, 1.964%), refractive index (1.4664, 1.4671, 1.4669), absorbance in UV region at 232-270 nm and colour at 35 yellow were determined while oil extracted from three ripe olive varieties (Cairo7, Frantoio and Arbequina) such as, acid value (0.83. 0.981. 0.34). perioxide value (9.98, 9.73. 9.93), iodine value (79.897. 73.134. 74.02). saponification value (191.796, 190.499. 193.094). unsaponifiable matter %(1.65%, 1.73%, 1.95%), refractive index (1.4720. 1.4710. 1.4770) absorbance in UV region at 232-270 nm and colour at 35 yellow were determined .

3) Separation and determination of fatty acids composition of olive oil extracted from ripe and unripe fruits of three varieties (Cairo 7, Frantoio and Arabequina) are carried out by gas liquid chromatography, the results showed that 7 fatty acids were identified myristic ($C_{14:0}$), palmitic ($C_{16:0}$), palmitoleic ($C_{16:1}$), stearic ($C_{18:0}$), oleic ($C_{18:1}$), linoleic ($C_{18:2}$), and linolenic ($C_{18:3}$).

Palmitic ($C_{16:0}$) was the dominating saturated fatty acid which represented 14.61%, 15.22% and 14.27% for three olive oil varieties extracted from ripe fruits and 15.38, 15.64 and 14.47 for olive oil extracted from unripe fruits. While oleic acid ($C_{18:1}$) represented the major unsaturated fatty acid, it was 68.43, 66.58 and 68.97 for three olive oil varieties extracted from ripe fruits and 68.81, 66.82 and 66.29 of olive oil extracted from unripe fruits.

4) Unsaponifiable matter was extracted from olive oil with diethyl ether and fractionated by gas liquid chromatography. The results revealed that the unsaponifiable matter of three olive oil varieties consisted of two groups hydrocarbons and sterols. The hydrocarbon compounds of three olive oil varieties extracted from ripe and unripe fruits were fractionated to ten separated compounds tetradecane, hexadecane, octadecane, eicosane, heneicosane, docosane, tricosane, tetracosane, pentacosane, squalene. Squalene represented the major hydrocarbons which ranged between 68.61 and 72.01. The sterols of three olive oil varieties were fractionated to four compounds β-sitosterol, ergosterol, stigmasterol and campesterol. β-sitosterol represented the major sterol compounds which ranged between 15.162 and 16.476.

5) Oxidative stability of virgin olive oil was determined by rancimat at 100 °Cwas(19, 18.1, 22.8, 17.2, 13.9, 18.5) in hours.

6) Tocopherol of three olive oil varieties extracted from unripe and ripe fruits (Cairo 7, Frantoio, Arbequina) was (48, 46, 48, 54, 50, 70) ppm.

7) Total polyhydric phenols contents (ppm) of three olive oil varieties extracted from unripe and ripe fruits (Cairo 7, Frantoio, Arbequina) were (220, 195, 245, 180, 140, 200) ppm.

8) Total polyhydric phenol contents (ppm) of Cairo 7, Frantoio and Arbequina olive waste water were (488, 468, 488, 478, 453, 472) ppm.