

# **UTILIZATION OF SOME COMPONENTS OF OLIVE POMACE IN FOOD PRODUCTS**

**By**

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**B.Sc. Agric. Sci. (Food Science), Fac. Agric., Damascus Univ., 2004  
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**THESIS**

**Submitted in Partial Fulfillment of the  
Requirement for the Degree**

**DOCTOR OF PHILOSOPHY**

**In**

**Agricultural Sciences  
(Food Science)**

**Department of Food Science  
Faculty of Agriculture  
Cairo University  
EGYPT**

**2017**



**APPROVAL SHEET**

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**Title of Thesis:** Utilization of some components of olive pomace in food products

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## ABSTRACT

This study was carried out to optimize the extraction conditions of polyphenols with high antioxidant potential from dried, defatted olive (*Olea europaea* L.) pomace powder and to evaluate the efficiency of olive pomace extract as natural antioxidant compared with butylated hydroxytoluene (BHT) during accelerated oxidation of edible sunflower oil at 110 °C. Extraction with aqueous methanol (80%) was conducted using shaking, homogenization and ultrasonic techniques at room temperature. Extracts were analyzed by high performance liquid chromatography (HPLC) for the contents of polyphenols and flavonoids. The scavenging activity of the extracts were determined against 1, 1-diphenyl-2-picryl-hydrazyl (DPPH) and hydrogen peroxide radicals. The highest extraction yield of polyphenols ( $86.14 \pm 0.80$  mg GAE/g dried defatted pomace) was obtained with the ultrasonic technique using solvent/pomace ratio of 40:1 for 30 min at 50% of the ultrasound intensity. Sonicated extracts were characterized by the presence of pyrogallol, 3-hydroxytyrosol and oleuropein. The most common flavonoids in the extracts were hesperidin, naringin, and hesperetin. Rutin, quercetin, rosmarinic acid, acacetin, naringenin, and quercitrin were also found in considerable concentrations. Olive pomace extract obtained with the ultrasonic technique using solvent/pomace ratio of 20:1 for 7 min at 50% of the ultrasound intensity possessed twice antioxidant activity of the synthetic antioxidant BHT. Olive pomace extract at 150 mg Gallic Acid Equivalents/kg oil was superior in protecting sunflower oil against oxidative deteriorative changes than BHT at 200 ppm. The results suggest that pomace ultrasound assisted extract could be considered as a potential source of natural antioxidants. Extra virgin olive oil exhibit distinct cooling and melting thermogram by differential scanning calorimeter that are different from those of pomace oil representing changes in the composition.

**Keywords:** Olive pomace, total polyphenols, flavonoids, ultrasonic assisted extraction.





## DEDICATION

*I dedicate this work to my great father, to my merciful mother, to my brothers and sisters. I am extremely thankful to my beloved wife **Zubaida Saleam Alahmad** for her support and encouragement giving me the strength and comfortable atmosphere to finish this study and to my daughter and to all whom I love. I am extremely grateful to my parents, who did all the best to help me in my education, my beautiful wife, my sisters and my brothers.*



## *ACKNOWLEDGEMENT*

*To the Almighty God “ALLAH” who have granted me all these graces to fulfill this work and who supported me in all my life. To Him I extend my heartfelt thanks. It is a pleasure to express my sincere and deepest heartfelt gratitude to my Prof. Dr. Mohamed Khairy El Sayed MORSI for his kind supervision, continuous encouragement, valuable enthusiastic discussion and unfailing advice throughout the present work. He assisted in all matters, provided solutions to different problems. Prof. Dr. Samy Mohamed Galal supported and helped me during my learning period in Egypt and writing this thesis and for his comments, encouragement, and interest. I am very lucky being one of his students.*

*Special thanks to all the staff member of the Department of Food Science, Faculty of Agriculture (Cairo University) for their cooperation and assistance.*



# CONTENT

	Page
<b>INTRODUCTION</b> .....	1
<b>REVIEW OF LITERATURE</b> .....	3
1. Chemical composition of olive fruit and olive pomace.....	3
2. Effect of extraction conditions on olive oil yield and quality.....	5
3. Polyphenols content of olive pomace extracted with different techniques .....	7
4. <i>In vitro</i> antioxidant activity of olive fruit and olive pomace polyphenols.....	11
5. The difference between crude pomace oil and virgin olive oil .....	16
<b>MATERIAL AND METHODS</b> .....	18
<b>RESULTS AND DISCUSSION</b> .....	29
1. Chemical composition of olive fruit and its pomace.....	29
2. Effect of malaxation time on chemical composition of Maraki olive pomace.....	31
3. Effect of malaxation time on the yield and quality characteristics of olive oil.....	31
4. Effect of extraction ratio, time and technique on the yield of total polyphenols from olive pomace .....	33
5. HPLC analyses of polyphenols.....	40
6. Radical scavenging activity of pomace extracts.....	55
7. Antioxidant activity of polyphenols and unsaponifiable matter extracted from olive pomace.....	64
8. Discrimination between virgin olive oil and crude pomace oil.....	67
9. Fatty acid composition of extra virgin olive oil and crude olive pomace oil.....	71
10. Fourier Transform Infrared Spectroscopy (FTIR).....	74
11. Differential Scanning Calorimetry analysis (DSC).....	76
a. Cooling thermograms of olive oil.....	76
b. Heating thermograms of olive oil.....	78
<b>SUMMARY</b> .....	80
<b>REFERENCES</b> .....	85
<b>ARABIC SUMMARY</b> .....	



## LIST OF TABLES

No.	Title	Page
1.	Chemical composition of olive fruits and its pomace .....	30
2.	Chemical composition of Maraki olive pomace obtained at different malaxation times.....	31
3.	Yield and quality characteristics of Maraki virgin olive oil during different malaxation times.....	33
4.	Total polyphenols extracted from olive pomace by shaking technique.....	33
5.	Total polyphenols extracted from olive pomace by homogenization technique.....	34
6.	Total polyphenols extracted from olive pomace by ultrasonic technique using solvent: pomace ratio 20:1 during 10 min.....	37
7.	Total polyphenols extracted from olive pomace by Ultrasonic intensity 50% during 60 min.....	38
8.	Polyphenols content (mg/g dried deoiled pomace) .....	41
9.	Flavonoids content (mg/g dried deoiled pomace) .....	48
10.	Scavenging activity of olive pomace extracts obtained by shaking technique against DPPH and H <sub>2</sub> O <sub>2</sub> radicals.....	56
11.	Scavenging activity of olive pomace extracts obtained by homogenization technique against DPPH and H <sub>2</sub> O <sub>2</sub> radicals...	58
12.	Scavenging activity of olive pomace extracts obtained by ultrasonic technique against DPPH and H <sub>2</sub> O <sub>2</sub> radicals.....	61
13.	Scavenging activity of olive pomace extracts obtained by Ultrasonic technique (Intensity 50%, T9) against DPPH and H <sub>2</sub> O <sub>2</sub> radicals.....	63