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
M.Sc. Agric. Sci. (Food Science), Fac. Agric., Damascus Univ., 2009

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APPROVAL SHEET

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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 (*Oleaeuropaea* 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±0.80 mg GAE/g dried defatted pomace)was obtainedwith the ultrasonic techniqueusing solvent/pomace ratio of 40:1for30 min at 50% of the ultrasound intensity.Sonicated extracts were characterized by the presence of pyrogallol, 3-hydroxytyrosol and oleuropein. The most common flavonoids inthe 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 intensitypossessed 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 andto 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.*

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