

## ABSTRACT

The aim of this study was to focus on the changes of some components of green Table olive fruits occurred during processing and storage, in order to provide more information for selected processing techniques in five varieties, Picual, Sennara, Baldy, Egizi Axi, and Egizi Shami) were investigated for the changes of physicochemical parameters during processing. Chemical composition (moisture, protein, fat, ash, and fiber) were determined and degree of acidity on brine solution during fermentation. Results showed that the untreated fresh olive contained the highest total phenols in all cultivars as compared to the treated samples. The total phenols decreased as the NaOH increased from 1.5 to 2% after soaking and washing treatments. However, the total phenols decreased as the fermentation process continued up to 9 months in all cases. In the fresh olive fruits after pickling the polyphenols of all varieties decreased. The highest FFA% in all cultivars oleic acid which decreased gradually as the fermentation period (12 months). The oleic acid percentage was 72.18 and 72.28% of fresh olive variety (Balady and Egizi Shami respectively). After pickling oleic acid percentage (70.21, and 69.46%). The total saturation FFA generally, increased with increasing fermentation time compared to the total saturation FFA of the fresh olives in all varieties. Protein contents and amino acid composition in Picual olive decreased after pickling and treated with Ozone oxidation with all treatments. The highest value of oil was found in the unprocessed green Table olives. Crude fiber and ash were decreased after treating olives with ozone oxidation. An important reduction in the amount of sugar was found during the ozone oxidation and fermentation, but only traces of sugar were detected after fermentation of table olives. The salt concentration in brine solution was found to be the most important factor for producing table olives. Other factors are the degree of maturation and variety which also affected. Chemical composition and degree of maturation also affected the acidity in brine solution during fermentation. Thus, the traditional fermentation of green table olives could be affected by using different concentrations of salt being (zero, 4, 8, and 12%).

. It could be concluded that the suitable concentration of sodium chloride for pickling olive fruits was 12% for keeping quality of stored table olives.

Ozone oxidation caused a slight decrease in protein content in Picual olive, this decreasing of protein may be attributed to the loss of soluble protein diffusion from fruits to the brine. Generally data revealed that all sensory characteristics such as color. Finally treatment table olive by ozone oxidation give a good color but it decrease the quality and not acceptable Table olives.

# Contents

No		Pag
	<b>1. INTRODUCTION.....</b>	<b>1</b>
	<b>2. REVIEW OF LITERATUR.</b>	<b>5</b>
2.1.	Olive Fruits	5
2.1.1.	Structure of olive fruits.	6
2.1.2.	fruit weight.	8
2.1.3.	Flesh /Fruit ratio.	9
2.2.	Chemical Composition of Olive Fruits.	9
2.3.	Table Olive Processing.	11
2.3.1.	Spanish Method	11
2.3.2.	Californian Method	12
2.3.3.	Greek Style Method	12
2.3.4.	Oxidation of table olive	13
2.4	Physical and chemical changes of pickled olives	13
2.4.1.	Changes of total acidity.	16
2.4.2.	Changes in sugar content.	18
2.4.3.	Effect of salt (NaCL) concentration on table olive.	18
2.4.4.	Effect of (NaOH) concentration on table olive.	20
2.4.5.	Changes of pH values during fermentation.	22
2.4.6.	Changes of Reducing Sugars.	22
2.4.7.	Antioxidant And Phenolic profile of Olives.	23
2.4.8.	Changes of nitrogenous constituents.	27
2.4.9.	Other changes.	28
2.5.	Extra cur Of Olive Oil.	29
2.5.1.	Fatty Acid Composition of olive oil.	29
2.5.2.	Olive protein content and Amino Acid Composition.	32
2.6.	Storage of olives.	33
2.7.	Spoilage of green olives	35
	<b>3. MATERIALS AND METHODS</b>	<b>38</b>
3.1	Materials:	38
3.1.1.	Olive fruits.	38
3.1.2.	Sodium Chloride.	38
3.2.	Methods.	38

3.2.1.	Pickling treatment.....	38
3.2.2.	Olive fermentation.	39
3.2.3.	Physical properties of fresh olive fruits	39
3.2.3.1.	Weigh of fruits	39
3.2.3.2.	Size of fruits	40
3.2.3.3.	Flesh and pit ratio	40
3.2.4.	Chemical analysis of Pickled olive fruits.	40
3.2.4.1.	Moisture content	40
3.2.4.2.	Lipid contents	40
3.2.4.3.	Crude protein	40
3.2.4.4.	Determination of ash.	41
3.2.4.5.	Determination of fiber.	41
3.2.4.6.	Reducing Sugar	41
3.2.4.7.	Determination of sugar.	42
3.2.4.8.	Titrateable acidity (TA).	42
3.2.4.9.	Total acidity.	44
3.2.4.10.	pH value.	44
3.2.4.11.	Total phenol contents.	44
3.2.5.	Chemical Analysis of olive oil.	45
3.2.5.1.	olive oil extraction	45
3.2.6.	Chromatographic Analysis	45
3.2.6.1.	Fatty acids component in olive oil .	45
3.2.6.2.	Determination of Amino acid content of table olives.	46
3.2.7.	Ozone treatment	48
3.2.8.	Sensory evaluation of Pickled olive fruits.	48
<b>4.</b>	<b>RESULTS AND DISCUSSION.....</b>	<b>50</b>
4.1.	Physical properties of olive fruits.	50
4.1.1.	Fruit's Weight (gm)	50
4.1.2.	Fruit's size.	50
4.2.	Chemical Properties of olive varieties.	51
4.3.	Soaking concentration	55
4.4.	Changes of some chemical characteristics during fermentation.	56
4.4.1.	Changes of Titrateable Acidity.	57
4.4.2.	Changes of Free acidity during fermentation of olive fruits.	59
4.4.3.	Changes in pH values during fermentation of olive fruits.	66
4.4.4.	Changes of NaCL content	67

4.4.5.	Changes of Reducing sugars during fermentation	69
4.4.6.	Natural phenols content of olive during fermentation.	73
4.5.	Chromatographic Analysis.	79
4.5. 1.	Changes of Fatty acids composition during fermentation.	79
4.5.2.	Olive protein content and Amino Acids composition.	83
4.6.	Sensory evaluation of pickling olive.	85
4.7.	Effect of different concentration of salt on table olive during fermentation.	89
4.7.1.	Effect of salt concentration on moisture content of olive variety	90
4.7.2.	Effect of salt concentration on Fat content of olive variety.	95
4.7.3.	Effect of salt concentration on Protein content of olive variety.	100
4.7.4.	Effect of salt concentration on ash content of olive variety	105
4.7.5.	Effect of salt concentration on crud fiber of olive variety.	110
4.8.	Chemical composition of olive varieties after pickling (on dry Weight basis).	115
4.8.1.	Effect of O <sub>3</sub> oxidation on chemical composition of Picual olive.	117
4.8.2	Effect of O <sub>3</sub> oxidation on amino acids of Picual olives	119
4.9.	Sensory evaluation of Picual olive treated by Ozone oxidation.	122
<b>5.</b>	<b>SUMMERY AND CONCLUSION .....</b>	<b>125</b>
<b>6.</b>	<b>REFERENCE</b>	<b>131</b>
<b>7.</b>	<b>ARABIC SUMMERY</b>	<b>151</b>