



Universidad de Jaén



RECOVERY OF BIOACTIVE COMPOUNDS FROM EXHAUSTED OLIVE POMACE

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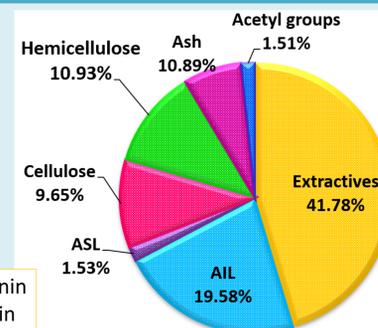


INTRODUCTION

Olive tree farming practices and the olive oil industry generate huge amounts of wastes every year. One of the main components of these agroindustrial residues is the extractive fraction and interestingly it contains non-structural components, including bioactive compounds. Particularly, **exhausted olive pomace (EOP)** is the final residue resulting from the industrial extraction of olive-pomace oil with hexane and the extractives account for more than 40% of its chemical composition.

OBJECTIVE Comparison of different extraction methods to evaluate the extraction of natural antioxidant compounds from EOP.

EXHAUSTED OLIVE POMACE COMPOSITION



AIL: Acid Insoluble Lignin
ASL: Acid Soluble Lignin

EXPERIMENTAL

EXTRACTION CONDITIONS

	Solvent	Solvent (% v/v)	Temperature (°C)	Time (min)	Solids (%)
Hydrothermal extraction	Water	100	85	90	10, 15
		100	200	0	5, 15, 25
Organosolv extraction	Ethanol	50	200	0	5, 10, 15, 20, 25
		100	55	30	2
Accelerated extraction	Water	100	190	10	2
		100	55	90	5, 15, 25
Extraction with aqueous salt solution	Sodium chloride	3, 9	55	90	5, 15, 25
		6	55	120	5, 15, 25

EXHAUSTED OLIVE POMACE



Hydrothermal extraction



Organosolv extraction



Accelerated extraction



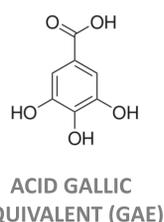
Extraction with aqueous salt solution



ANALYTICAL DETERMINATION

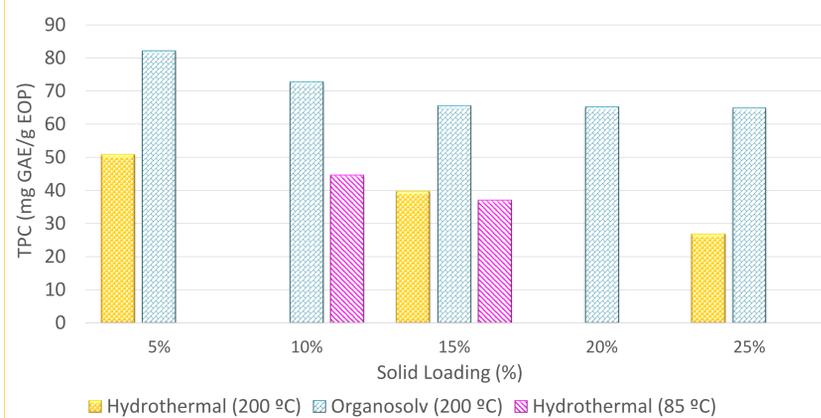


TOTAL PHENOLIC CONTENT



RESULTS

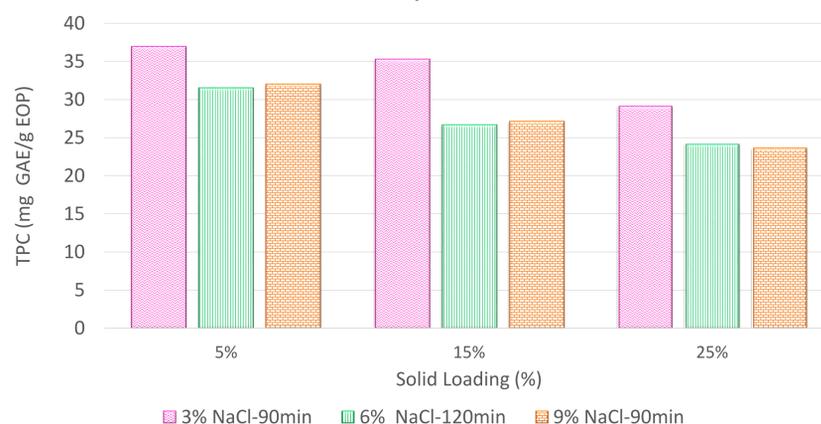
HYDROTHERMAL-ORGANOSOLV



ACCELERATED EXTRACTION

Cycle	Temperature (°C)	Time (min)	Solids (%)	TPC (mg GAE/g EOP)
1	55	30	25	35.6
2	55	30	25	6.3
1	190	10	25	40.6
2	190	10	25	9.3

EXTRACTION WITH AQUEOUS SALT SOLUTION



CONCLUSIONS

- ❖ The solid loading showed a negative influence on the phenolic compounds extraction with all techniques used.
- ❖ Using water as extractive agent, the values ranged between 26.8 and 50.8 mg gallic acid equivalents (GAE)/g EOP, depending on the conditions.
- ❖ In the accelerated solvent extraction, the temperature showed a clear positive effect on the phenolic compound extraction and the extraction time was considerably reduced. It allows to obtain 40.6 mg GAE/g EOP at 190 °C in 10 min.
- ❖ The best results were found using organosolv extraction at 200 °C (82.1 mg GAE/g EOP). After characterization, hydroxytyrosol was found to be one of the potential active compounds in EOP.

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CHROMATOGRAM

