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Phenolic compounds of olive mill wastewater (OMW) samples from Spain and evaluation of their antioxidant potential

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INTRODUCTION & AIM

2.5 millions tons of olive oil ..... **Waste and byproducts** ----> **Economic and environmental impact**

VALORIZATION AND SOSTENIBILITY

Recovery of nutrients and bioactive compounds from abandoned alpechin ponds and their validation in the agri-food sector.

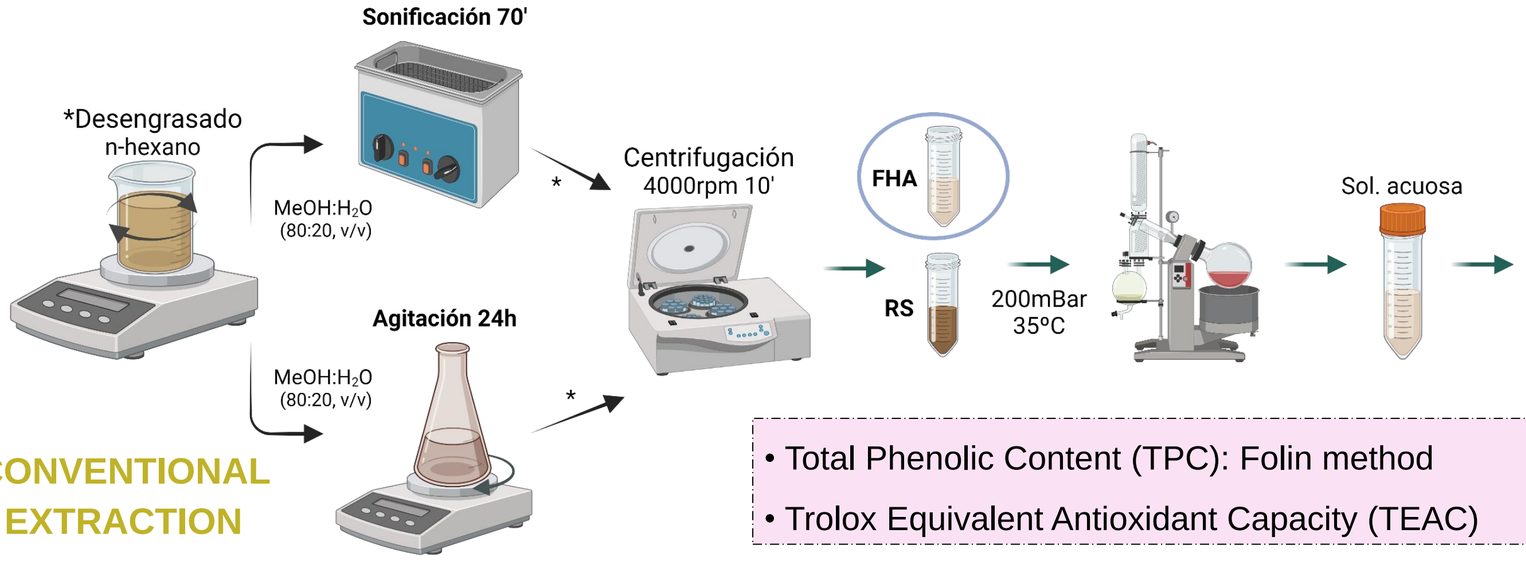
- ❖Optimize the conventional extraction of phenolic fractions present in the *alpechín (OMW)*
- ❖Characterize the total phenolic content (TPC)
- ❖Determinate their antioxidant potential using the TEAC assay

METHOD

8 OMW simples (liquid) & 5 OMW sludge simples (solid)

S/L EXTRACTION

CONVENTIONAL EXTRACTION



- Total Phenolic Content (TPC): Folin method
- Trolox Equivalent Antioxidant Capacity (TEAC)

L/L EXTRACTION

x3 25mL de **Acetato de Etilo**

Rotavapor 160mBar 35ºC

Extracto metanólico

Extracto acuoso

RESULTS & DISCUSSION

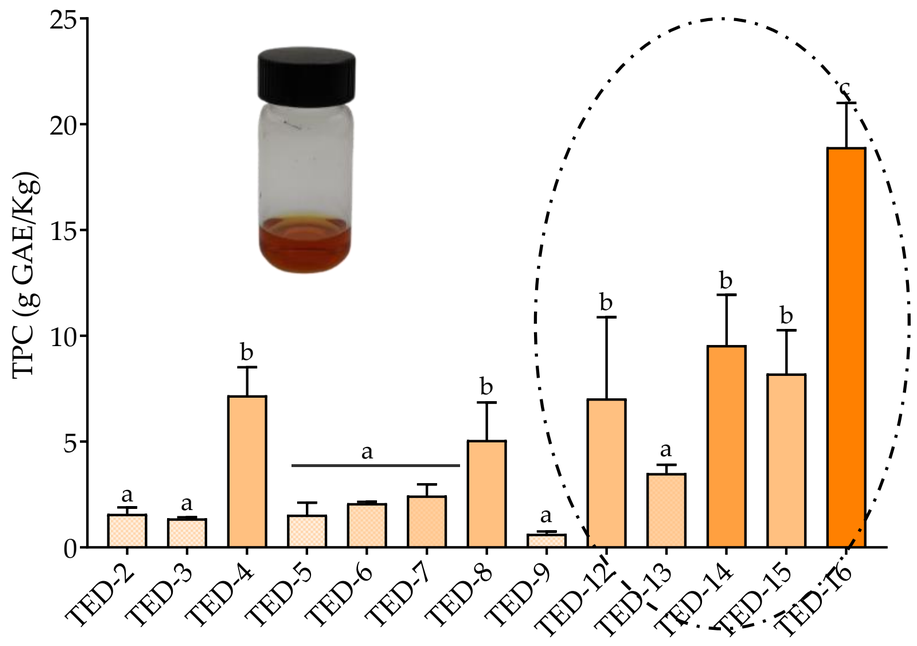


Figura 1. Total phenolic content (TPC) values (mg GAE equivalents/g fresh olive mill wastewater, OMW), in conventional extraction of the different TED samples. Natural pH. Small letters: indicate significant difference (p-value < 0.05).

TED-16 (Toledo)

TED-14 (Beneixama, Alicante)

TED-15 (Galera, Tarragona)

TED-4 (Luque, Córdoba)

TED-12 (Beneixama, Alicante)

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TED-16 (Toledo)

TED-4 (Luque, Córdoba)

TED-5 (Luque, Córdoba)

TED-14 (Beneixama, Alicante)

TED-7 (Espejo, Córdoba)

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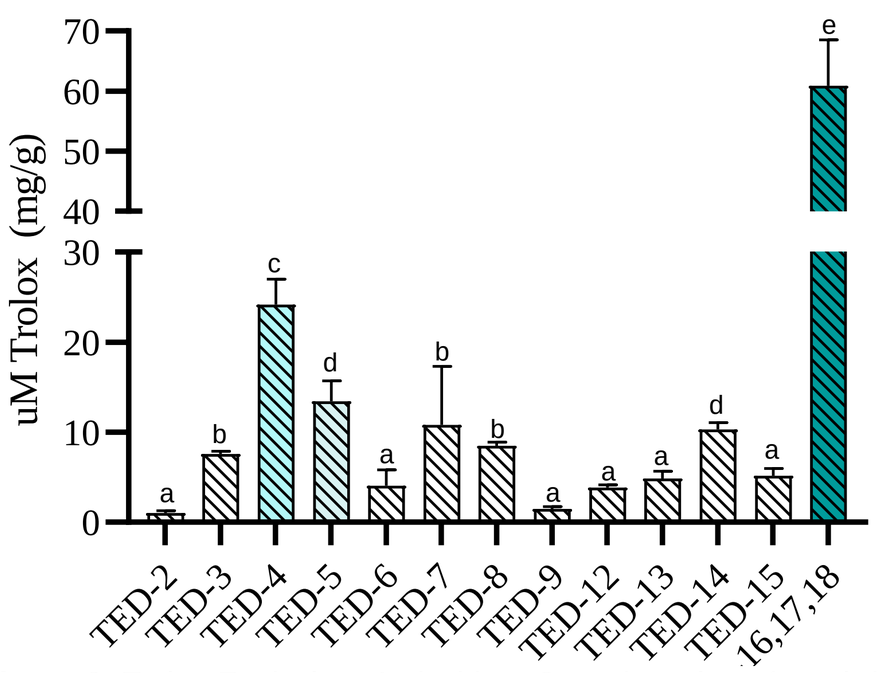

Figura 2. Trolox Equivalent Antioxidant Capacity values (mmol de equivalents de Trolox/g fresh olive mill wastewater, OMW), in conventional extraction of the different TED samples. Natural pH. Small letters: indicate significant difference (p-value < 0.05).

CONCLUSION

- ✓ The phenolic content and antioxidant power of alpechin (OMW) is influenced by the state of the matrix and the location.
- ✓ The samples from ponds TED-16 (Toledo), TED-14 (Beneixama) and TED-4 (Córdoba) had a higher content of total polyphenols.
- ✓ This study provides a solid basis for the implementation of innovative strategies for the valorization of this residual material as potential bioactive compounds for the food and agricultural industries.

REFERENCES

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2. De Marco E., Savarese M., Paduano A.; Sacchi R. (2007). Characterization and fractionation of phenolic compounds extracted from olive oil mill wastewaters. Food Chem. 104, 858–867

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