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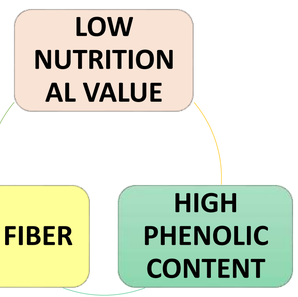
# DEEP EUTECTIC SOLVENT PRETREATMENT OF OLIVE POMACE

**Dicle Delal ASLANHAN*, Miyase Deniz CAM, Simel BAGDER ELMACI, Ozge SAKIYAN, Asli ISCI**
Faculty of Engineering, Food Engineering Department,
Ankara University, Golbasi, Ankara, Turkiye

## Introduction

- Olive pomace (OP) is a by-product of olive oil industry. It has low nutritional value, high fiber and phenolic content.



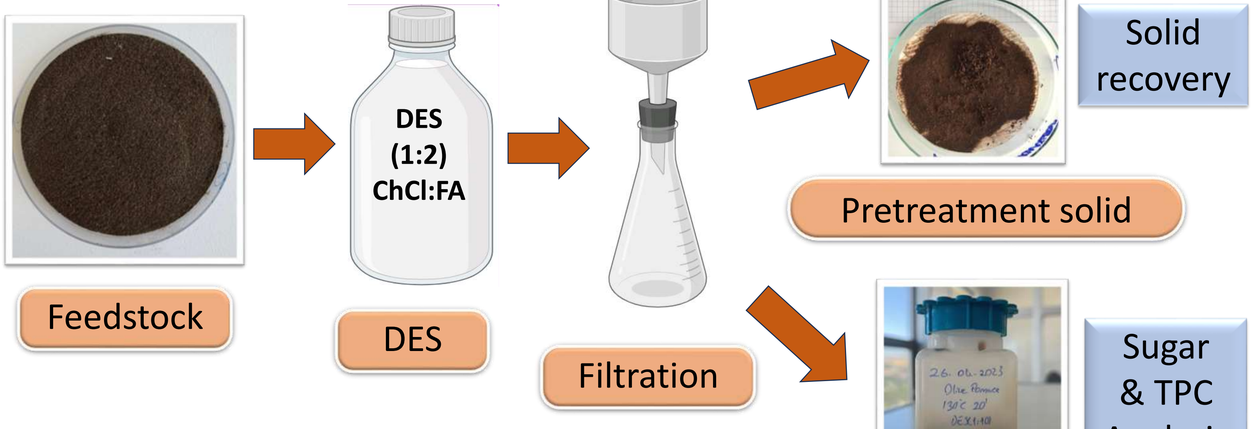

- Globally, 20-30 million tons of OP is produced annually, which could be utilized to produce value added products.
- Deep eutectic solvents (DES) are attracting great attention due to its excellent capacity to dissolve lignin in lignocellulosic biomass.

low synthesis cost → recyclability → environmentally friendly → DES

- The main **objective** of this study was to investigate the effect of DES pretreatment on OP.

## Materials and Methods

- Olive pomace samples were treated with choline chloride:formic acid at 1:2 mole ratio, at different temperatures (90, 110, and, 130°C) and pretreatment times (20, 40, and, 60 min).




- Monosaccharides were analyzed using a Dionex ICS-6000 system with pulsed amperometric detection (HPAEC–PAD).
- The total phenolic content (TPC) of the liquid fraction was determined by Folin-Ciocalteu method.
- The solid recovery (SR) was calculated based on the ratio of dry biomass weight after pretreatment to dry biomass weight before pretreatment.

## Results and Discussion

✓ Solid recovery was decreased as the temperature increased from 90°C to 130°C.

✓ No significant difference between pretreatment time.

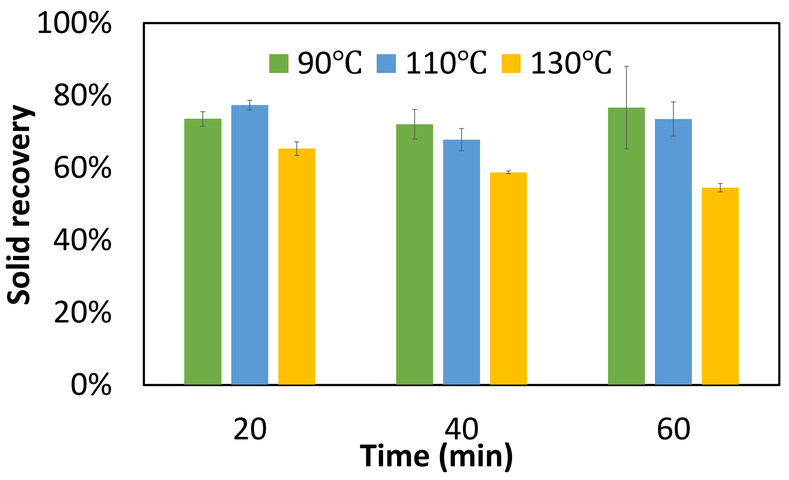



**Fig. 1** Effect of pretreatment conditions on solid recovery

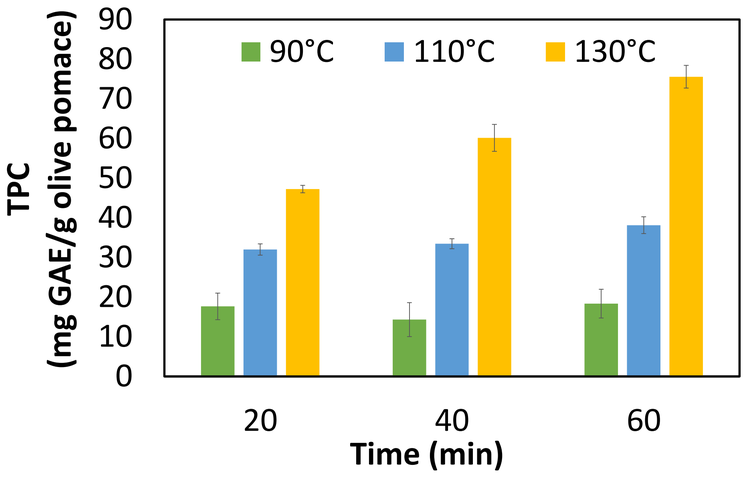



**Fig. 2** Effect of pretreatment conditions on TPC

✓ TPC was increased with an increase in temperature.

✓ The highest total phenolic content (75.6 mg GAE / g dry OP) was observed at 130°C-60 min.

✓ Pretreatment temperature had a significant impact on glucose release.

✓ The amount of glucose in the samples was increased with time (at high temperatures).

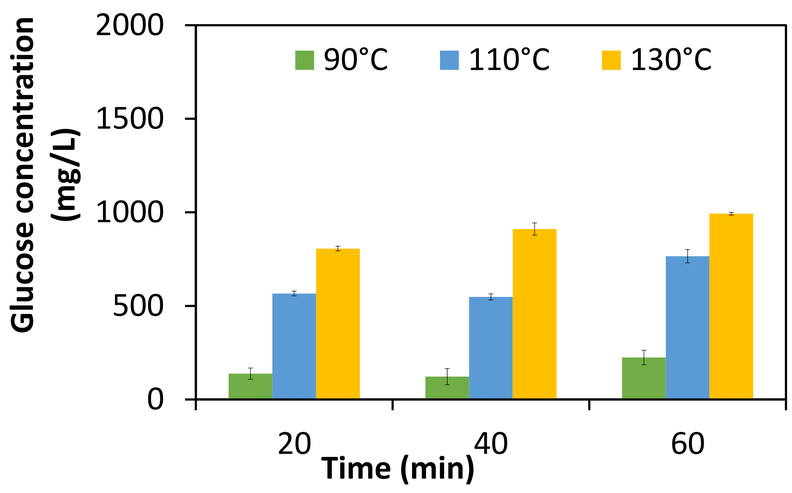



**Fig. 3** Glucose concentrations in the liquid fraction

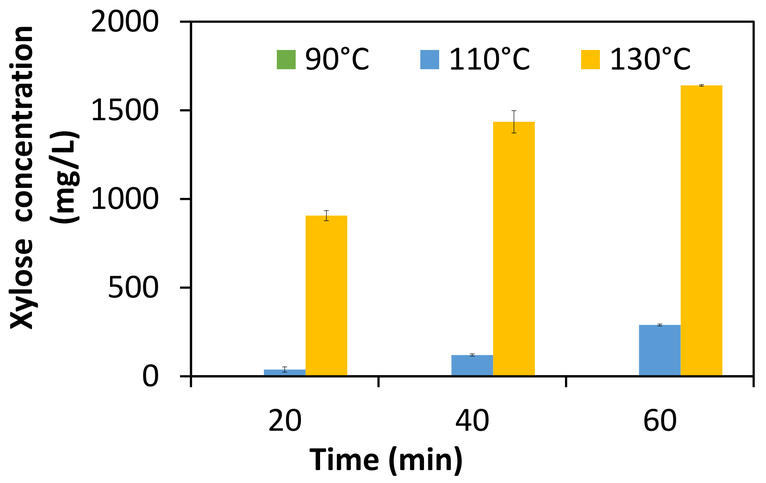



**Fig. 4** Xylose concentrations in the liquid fraction

✓ Xylose was not hydrolyzed at 90 °C.

✓ A positive effect was observed with an increase in time and temperature for xylose solubilization.

## Conclusion

The percentage of solids recovered was in the range of 53.56 - 79.08%. Pretreatment temperature had a significant impact on the release of phenolic compounds from olive pomace biomass. The concentrations of glucose and xylose were 0.99 and 1.6 g/L at 130°C-60 min, respectively. Further research will be performed to determine the digestability of the treated olive pomace.

**References:**
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•https://doi.org/10.1002/bbb.2073
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***Corresponding author: dicledelalaslanhan@gmail.com**

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