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AUTOR

Ana Isabel Ramos Novo Amorim de Barros

CO-AUTOR(ES)

Ana Cristina S. Abraão; Cátia S. Teixeira; Irene P. Gouvinhas; Ivo Oliveira; Jéssica Ribeiro;
Jorge L. Barros; Márcia Carvalho; Raquel Fernandes; Rui D. Costa; Sílvia Afonso

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ABSTRACTS

Comunicações Orais

SUSTENTABILIDADE NO SISTEMA ALIMENTAR

Different approaches to Olive Pomace valorisation

Ana Cordeiro^{1,2}, Sandra Lamas¹, Ana Rodrigues¹, Vasco Cadavez¹, Sara Silvério^{2,3}, António M. Peres¹, Lúgia R. Rodrigues^{2,3}, Cláudia Amorim^{2,3}

¹CIMO, LA SusTEC, Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal; peres@ipb.pt

²CEB, Universidade do Minho, Campus de Gualtar, 4710-057, Braga, Portugal; claudia.oliveira.amorim@ceb.uminho.pt

³LABELS, Associate Laboratory, Guimarães, Braga, Portugal.

Olive pomace (OP) is a substantial by-product, rich in lignocellulosic materials and water, obtained following the extraction of olive oil. It comprises the following components: olive skins, pulp, seeds, and stones. As global olive oil production continues to rise, the management and utilisation of OP have become increasingly important from both an economic and an environmental perspective [1]. In this study, the OP was chemically characterized and its potential as a source of value-added compounds was evaluated. For this purpose, several extraction studies were preformed, namely lipid extraction using petroleum ether, phenolic compound extraction with ethanol, and free sugar extraction with water using a Soxhlet system (Figure 1).

These extractions allowed to recover 11.1 ± 0.3 % (w/w) of lipids, different types of phenolic compounds and oligosaccharides. Phenolic compounds are widely recognized for their health-promoting properties (e.g. antioxidant, anti-inflammatory, cancer prevention or antimicrobial activity) and have been the subject of extensive research. Oligosaccharides (OS) are short chains of monosaccharide units linked by glycosidic bonds. The ingestion of these compounds has been demonstrated to confer a multitude of salutary effects, predominantly due to their function as prebiotics and their capacity to regulate gut health and influence overall metabolic processes.

Enzymatic hydrolysis was also performed using commercial xylanase from *Trichoderma reesei*, under optimal conditions (pH 4.5, 40°C, 150 rpm) to evaluate the potential of OP to produce xylo-based oligosaccharides [2]. The hydrolysis process was monitored through Thin Layer Chromatography (TLC), High-Performance Liquid Chromatography (HPLC) using different columns, and the Dinitrosalicylic acid (DNS) method (Figure 2).

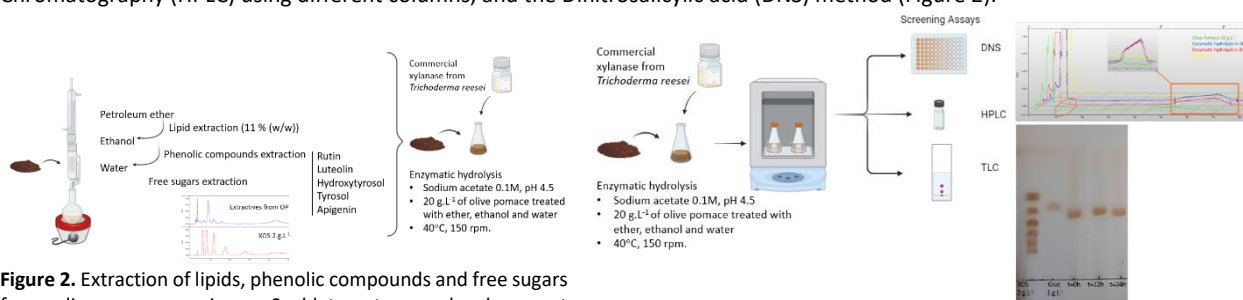


Figure 2. Extraction of lipids, phenolic compounds and free sugars from olive pomace using a Soxhlet system and subsequent enzymatic hydrolysis using a commercial xylanase.

Figure 1. Enzymatic hydrolysis of olive pomace using a commercial xylanase and HPLC and TLC results.

The results indicated the production of xylo-based oligosaccharides, validating the proposed bioprocess as a viable method for XOS production from OP. This approach not only provides value-added to OP but also aligns with sustainable waste management practices.

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