

Toward biotechnological conversion of olive oil mill by-products into valuable biomolecules and microbial biomass

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Abstract

Background and Aim: Food wastes valorization toward valuable biomolecules and biomass have received increasing attention in recent years. Olive oil production is worldwide widespread but generate a huge amounts olive oil mill residues for which biotechnological management is a challenge issue for the olive oil producer. Olive mill wastewaters (OMWW) which are characterized by powerful antioxidant and recalcitrant compounds to biodegradation represent an important environmental problem. Therefore, finding a suitable biovalorization strategy to exploit these by-products is a great interest.

Methods: The current study focused in OMWW conversion into valuable biomolecules and microbial biomass, probiotic bacteria and oleaginous yeasts for further lipids recovery. Antimicrobial potential of OMWW was also investigated. Yeasts and bacterial growth was monitored by plating on agar media. The antimicrobial properties of polyphenolic extracts from fermented and unfermented OMWW were assessed.

Results: The results reveals that raw OMWW exert a strong inhibition against yeasts and bacteria while substrate pretreatment led to cell growth and polyphenol biodegradation by yeasts. Moreover, polyphenolic extracts provide a wide antimicrobial spectrum against pathogenic and food spoiling bacteria.

Conclusion: OMWW could be considered as valuable substrate for microbial biomass production and bioactive compounds recovery.

Keywords: *Olive mill wastewater, Polyphenolic compounds, Antimicrobial, Bioconversion, Oleaginous yeasts, probiotic.*