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

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Introduction

Olive oil industry

Material and methods

Extraction methods

Olive mill wastewater

Ethyl acetate (V/V) x 3

under magnetic stirring

Centrifugation (4000 g/min)

Evaporation (rotary evaporator)

Antimicrobial activity

Yeasts and probiotic growth

Raw OMWW

Diluted OMWW

Enriched OMWW

Environmental issues

Results and discussion

Table 7. Produced biomass (CFU/ml) of Lactobacillus rhamnosus on OMWW1.

<table>
<thead>
<tr>
<th>Medium</th>
<th>Final biomass (CFU/ml)</th>
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<tbody>
<tr>
<td>M-MRS</td>
<td>2.75×10^6 ±7</td>
</tr>
<tr>
<td>DM</td>
<td>1.55×10^2 ±49.5*</td>
</tr>
</tbody>
</table>

(*) Cell survival

Table 8. Polyphenolic compounds (mg/kg) of OMWW1.

<table>
<thead>
<tr>
<th>Component</th>
<th>Amount (mg/kg)</th>
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<tbody>
<tr>
<td>Polyphenolic</td>
<td>7.0±0.5</td>
</tr>
<tr>
<td>Alkaloid</td>
<td>6.5±0.5</td>
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Results: The results reveal 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

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

Conclusion