

## **O4 - OLIVE MILL WASTEWATERS: A RESOURCE FOR BIOTECHNOLOGICAL PRODUCTION OF VALUE-ADDED PRODUCTS.**

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Olive mill industry is a traditional agricultural industry in Mediterranean countries. These countries produce almost all the olive oil sold worldwide. Olive oil production results on a large amount of wastewaters (OMW), which represents a major environmental problem. OMW is a dark liquid residue with high organic content composed mainly by sugars, tannins, polyphenols, polyalcohols, organic acids,

proteins, pectins and lipids. Different treatments and disposal alternatives can be found in the literature in order to provide solutions for the OMW problem. OMW biological treatments with its simultaneous valorization through the co-production of added-value products are one of the main approaches possible. In this work, the ability of several fungi (yeast and filamentous fungi) to reduce the polluting characteristics of OMW and to produce extracellular enzymes is shown.

Yeast species such as *Yarrowia lipolytica*, *Candida rugosa* and *Candida cylindracea* were used for the production of lipases in undiluted OMW based media (COD of 30 to 261 g/L). In fed-batch cultures of yeasts it was possible to attain high values of lipase activity and simultaneously a higher level of organic matter degradation than the observed in batch operation. Filamentous fungi were more efficient in degrading OMW in batch cultures than yeasts, mainly to reduce OMW colour, aromatic compounds, phenolic compounds and COD. The new species *Aspergillus ibericus* has shown to be a good lipase producer from OMW. Around 8000 U/L of extracellular lipase was possible to attain in a repeated-batch culture of this fungi, with a global 57% COD reduction of the OMW based medium.