



“Gheorghe Asachi” Technical University of Iasi, Romania



AQUEOUS EXTRACT FROM DRY OLIVE MILL RESIDUE AS A POSSIBLE BASAL MEDIUM FOR LACCASE PRODUCTION

Alessandro D'Annibale¹, Inmaculada Sampedro², Federico Federici¹,
Maurizio Petruccioli^{1*}

¹University of Tuscia, Agro-Food and Forest Systems (DIBAF), Department for Innovation in Biological,
Via S. Camillo de Lellis snc, 01100 Viterbo, Italy

²Estación Experimental del Zaidín, CSIC, Department of Microbiology, Prof. Albareda 1, 18008 Granada, Spain

Abstract

Due to its very low moisture content, the solid waste from the two-phase olive oil extraction process (dry olive mill residue, DOR) can be easily stored and used as a readily available basal liquid culture medium *via* its reconstitution with water. Five white-rot fungi (namely *Phanerochaete chrysosporium* NRRL 6361, *Lentinus tigrinus* CBS 577.79, *Pleurotus pulmonarius* CBS 664.97, *Phlebia radiata* DABAC 9 and *Botryosphaeria rhodina* DABAC P82), previously selected in a screening program, were compared for their ability to grow and to produce laccase on non-supplemented aqueous extracts of the dry olive mill residue (ADOR). The most effective strains, namely *L. tigrinus* and *P. radiata*, grown in a 3-l bubble-column reactor on 25% (w/v) ADOR, produced 6602 and 6001 nkatal l⁻¹ with respective mean volumetric productivities (MVP) of 68 and 83 nkatal l⁻¹ h⁻¹ and production yields of 375 and 418 nkatal g⁻¹ COD consumed, respectively. These results show that non-supplemented ADOR might constitute the basis of a growth medium allowing promising productions of laccase amenable to further enzyme optimization.

Key words: aqueous extract, dry olive mill residue, laccase, submerged fermentations, white-rot fungi

Received: July, 2012; *Revised final:* October, 2012; *Accepted:* November, 2012

* Author to whom all correspondence should be addressed: e-mail: petrucci@unitus.it; Phone: +390761357332; Fax: +390761357242