

Effect of Olive Oil Mill Waste Waters on *Lentinus edodes* (Berk.) Sing. Growth and Lignin Degrading Enzymes

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Olive oil mill waste waters (OMWs) are by-products of olive oil industries and represent a pollution problem in all Mediterranean countries, being rich in phenols and other organic matter. Among other compounds, OMWs contain small amounts of lipids (about 2% dry weight), mostly represented by oleic and palmitic acids, which could stimulate fungal growth. In this article the effect of OMWs on *Lentinus edodes* (Berk.) Sing. growth and laccase and Mn-peroxidase extracellular enzyme production on liquid and solid culture media were tested. In the experiments in liquid media 5 ml of a suspension of homogenized *L. edodes* mycelia were inoculated in 50 ml of OMWs and incubated at 25°C; in solid media, wheat straw was supplemented with OMWs or water, inoculated with *L. edodes* spawn, and incubated at 25°C. The activity of laccase and Mn-

peroxidase were monitored on raw fungal culture filtrates and on raw extracts from solid-state cultures.

The results showed that OMWs are efficient in enhancing fungal growth without interfering with ligninolytic enzymes production and lignin breakdown. The high OMW concentration (50% v/v) on wheat straw stimulated mycelial growth and resulted in slight inhibition of fruiting body formation while the lower concentration (25% v/v) enhanced both mycelial growth and fruiting body formation. From the results obtained OMWs could represent a good nutritional source to improve fungal development, and their utilization in mushroom production could be an efficient strategy to solve the pollution problem related to OMW.