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Comparative evaluation of the mushroom production performance of *Pleurotus ostreatus* and *P. eryngii* strains cultivated on by-products deriving from olive oil and wine industries

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The treatment and disposal of residues/wastes produced by wine and olive oil industries is a complex and often problematic process. For assessing the exploitation potential of these by-products, twenty strains of *Pleurotus ostreatus* and *P. eryngii* were cultivated in substrates consisting of grape marc and wheat straw (GM; 1:1 w/w), and olive leaves and two-phase olive mill waste (OL; 1:1 w/w). The GM-based substrate led to a reduction in the time required for mushroom appearance by 1 to 4 days compared to the conventional substrate (WS: wheat straw) for five out of ten *P. ostreatus* strains examined. Biological efficiency (fresh weight of mushrooms to dry weight of substrate) was higher in WS (55–97%) compared to GM and OL (up to 62%) for all strains tested. Furthermore, the total cultivation period (from inoculation to the end of second flush) lasted from 37 to 63 days in WS, whereas it was 41–71 days in GM and 61–80 days in OL. For the majority of *P. eryngii* strains studied, mushroom yields were significantly higher in the OL and GM substrates (when compared to WS) by 10 to 186% and by 4 to 86%, respectively. Substrates containing grape marc led to a reduction in total cultivation period by up to 22 days in respect to WS. In contrast, OL-based media prolonged the cultivation cycle of *P. eryngii*. Hence, by-products from wine and olive oil industries could be exploited as substrates for the production of *Pleurotus* mushrooms. Optimization of cultivation parameters (including assessment of the suitable ratios of the materials used and their effect on mushroom quality) is currently under way to generate new substrates for large-scale implementation of such bioprocesses.

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