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Evaluation of lignocellulolytic activities of ten fungal species able to degrade poplar wood



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ABSTRACT

The study of wood decay fungi that naturally biodegrade lignocellulosic polymers has been steadily increasing during the past two decades due to their industrial and innovative applications. In this work, we compare ten species of lignicolous macrofungi which develop fruiting bodies on poplar in relation to their capacity for growing on poplar wood chips and sawdust and of secreting cell wall degrading enzymes. All the fungi studied appeared to be able to grow well in these conditions and to secrete cellulase and hemicellulase, Mn-peroxidase and cellobiose dehydrogenase, while Li-peroxidase and laccase were produced by seven and six out of the ten species, respectively. Variability in the levels of all these enzymatic activities was assessed. Two species, never investigated before, showed the best performances as regards production of cellulolytic and hemicellulolytic activities (*Lenzites warnieri*) and Mn-peroxidase (*Perenniporia meridionalis*). The highest laccase level was detected in the well known plant pathogen *Fomes fomentarius*, and the brown-rot *Daedalea quercina* proved to be the best producer of lignin peroxidase and cellobiose dehydrogenase.