

**LACCASE PRODUCTION BY *PLEUROTUS* SPP. USING SOLID-STATE FERMENTATION:  
POLYPHENOLS BIOTRANSFORMATION AND AN INSIGHT TO ITS ANTIOXIDANT POTENTIAL**

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Mushroom enzymes such as glucose oxidase, superoxide dismutase, peroxidases and laccases may prevent oxidative stress and aid in the maintenance of human health. In particular, the laccase “never-ending story” has found a new promising trend within the search for efficient applicative research in several fields. Crude extracts of *Pleurotus spp* from the CEBI-UO collection were tested for their capacity to degrade/modify coffee pulp polyphenols as well as to produce laccase during the colonization process, using solid state fermentation. All strains presented similar profiles of laccase production over time. Coffee pulp showed a reduction in phenolic content during the first two days of incubation. *P.ostreatus* CCEBI 3023 strain was able to transform 53% of total phenols after 24 h while *P. ostreatus* CCEBI 3024 strain transformed 45%, after 48 h. All strains tested were able to transform Procyanidin B2 to a great extent evaluated by HPLC method. In addition, the antioxidant properties of the extracellular laccase fraction were determined by the DPPH reduction rate and the inhibition of lipid peroxidation. The antibacterial activity against strains of clinical interest was also evaluated. At least until we know, this is the first report with *Pleurotus* laccases on “the double-edged sword” (pro-oxidative and antioxidant effects). The preliminary results obtained point out to the free radical scavenging activity of the enzymatic extracts and are also in agreement with the idea of the antimicrobial actions of selected fungal laccases.