

Functional expression of fungal peroxidase (*Coprinus cinereus* peroxidase) in *Pichia pastoris* and characterization

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Peroxidase has many applications such as polymerization of phenolic compounds and waste water treatment. A cDNA encoding for a peroxidase was isolated from the fungus *Coprinus cinereus* by RT-PCR. It contains an open reading frame of 1092 bps. The deduced mature protein consisted of 344 amino acids and was preceded by a signal peptide of 20 amino acids. The cDNA was cloned into the pPIC_Z α A(wCiP) and expressed in the *Pichia pastoris* X-33. Peroxidase-secreting transformants were selected by their ability to oxidize the substrate 2',2'-azinobis-3-ethylbenzthiazoline-6-sulfonic acid (ABTS). While wCiP activity of *P. pastoris* grown in flask was only 120U/mL, in bioreactor on the optimized condition, extracellular wCiP activity was a maximum of 1151U/mL. And the Rz value of purified wCiP using SEC was measured 0.843, which was comparative with that of CiP from wild *Coprinus cinereus* fungi.