

We studied the role of genes encoding the cAMP-dependent protein kinase A catalytic subunit (PKAc) in the ligninolytic system in *Pleurotus ostreatus*. The wild-type *P. ostreatus* strain PC9 has two PKAc-encoding genes: *PKAc1* and *PKAc2* (protein ID 114122 and 85056). In the current study, *PKAc1* and *PKAc2* were fused with a β -tubulin promoter and introduced into strain PC9 to produce the overexpression strains PKAc1-97 and PKAc2-69. These strains showed significantly higher transcription levels of isozyme genes encoding lignin-modifying enzymes than strain PC9, but the specific gene expression patterns differed between the two recombinant strains. Both recombinants showed 2.05–2.10-fold faster degradation of beechwood lignin than strain PC9. These results indicate that PKAc plays an important role in inducing the wood degradation system in *P. ostreatus*.

PKAc1 and *PKAc2* play an important role in inducing the wood degradation system in *P. ostreatus*. Probably, the effects are mainly mediated by unknown pathways independent of CaM.

