

# Magnaporthe oryzae as an expression host for the production of the unspecific peroxygenase AaeUPO from the basidiomycete Agrocybe aegerita

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## Abstract

The filamentous fungus *Magnaporthe oryzae* has the potential to be developed as an alternative platform organism for the heterologous production of industrially important enzymes. *M. oryzae* is easy to handle, fast-growing and unlike yeast, post-translational modifications like N-glycosylations are similar to the human organism. Here, we established *M. oryzae* as a host for the expression of the unspecific peroxygenase from the basidiomycete *Agrocybe aegerita* (AaeUPO). UPOs are attractive biocatalysts for selective oxyfunctionalization of non-activated carbon-hydrogen bonds. To improve and simplify the isolation of AaeUPO in *M. oryzae*, we fused a *Magnaporthe* signal peptide for protein secretion and set it under control of the strong EF1-promotor. The success of the heterologous production of full-length AaeUPO in *M. oryzae* and the secretion of the functional enzyme was confirmed by a peroxygenase-specific enzyme assay. These results offer the possibility to establish the filamentous ascomycete *M. oryzae* as a broad applicable alternative expression system. This is in particular valid for proteins that cannot or not in sufficient yields produced in established systems.

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