

P009 The Pursuit Of A Novel Haloperoxidase For Asymmetric Catalysis
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Haloperoxidases are a group of enzymes with the ability to catalyse the halogenation of organic compounds in the presence of peroxides, such as H₂O₂, and halides. The most well known of the haloperoxidases is chloroperoxidase (CPO) from *Caldariomyces fumago*, a heavily glycosylated, monomeric heme protein and versatile catalyst that displays moderate to high levels of enantioselectivity on a number of olefinic substrates.

Recently, the first haloperoxidase from a basidiomycete has been described, showing amino acid sequence homology to CPO and comparable performance in certain reactions. We are currently screening other basidiomycetes for the presence of haloperoxidase enzymes that may compete with CPO as an enzyme for asymmetric catalysis.

Intra/extracellular proteins are extracted from cultures and screened for haloperoxidase activity via the staining of polyacrylamide gels (PAGE). Further testing is performed spectrophotometrically via the mono-chlorodimedone assay. Other protein characteristics, such as catalase activity or the presence of heme or vanadium, are also assayed via PAGE stains.

Using these techniques, we have shown haloperoxidase activity in *Stropharia aeruginosa*. The protein responsible for the activity appears to be of a similar size to CPO. It contains heme, is capable of both bromination and chlorination and appears to exhibit minimal catalase activity. The initial stages of protein purification are underway while we test crude extracts of this novel enzyme against several substrates that have been shown to be converted by CPO.