

## Acidic-alkaline ferulic acid esterase from *Chaetomium thermophilum* var. *dissitum*: Molecular cloning and characterization of recombinant enzyme expressed in *Pichia pastoris* - DTU Orbit (08/11/2017)

### Acidic-alkaline ferulic acid esterase from *Chaetomium thermophilum* var. *dissitum*: Molecular cloning and characterization of recombinant enzyme expressed in *Pichia pastoris*

A novel ferulic acid esterase encoding gene *CtFae*, was successfully cloned from a highly esterase active strain of the thermophile ascomycetous fungus *Chaetomium thermophilum* var. *dissitum*; the gene was heterologously expressed in *Pichia pastoris* KM71H. The recombinant enzyme (CtFae) was purified to homogeneity and subsequently characterized. CtFae was active towards synthetic esters of ferulic, p-coumaric, and caffeic acids, as well as towards wide range of p-nitrophenyl substrates. Its temperature and pH optima were 55 °C and pH 6.0, respectively. Enzyme rare features were broad pH optimum, high stability at extended acidic-alkaline pH region, and noticeable thermostability. CtFae released ferulic acid from wheat insoluble arabinoxylan, as well as ferulic and p-coumaric acids from wheat straw and ryegrass, indicating potentials for industrial applications like biomass conversion in biorefineries.

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