Feruloyl esterases from *Schizophyllum commune* to treat food industry side-streams

Annabel Nieter, Sebastian Kelle, Diana Linke, Ralf G. Berger

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Feruloyl esterases from *Schizophyllum commune* to treat food industry side-streams

Annabel Nieter[*1]; Sebastian Kelle[1]; Diana Linke[1]; Ralf G. Berger[1].

[1]*Institut für Lebensmittelchemie, Leibniz Universität Hannover, Callinstraße 5, 30167 Hannover, Germany*

Abstract

Agro-industrial side-streams are abundant and renewable resources of hydroxycinnamic acids with potential applications as antioxidants and preservatives in the food, health, cosmetic, and pharmaceutical industries. Feruloyl esterases (FAEs) from *Schizophyllum commune* were functionally expressed in *Pichia pastoris* with extracellular activities of 6,000 U L^{-1}. The recombinant enzymes, ScFaeD1 and ScFaeD2, released ferulic acid from destarched wheat bran and sugar beet pectin. Overnight incubation of coffee pulp released caffeic (> 60 %), ferulic (> 80 %) and *p*-coumaric acid (100 %) indicating applicability for the valorization of food processing wastes and enhanced biomass degradation. Based on substrate specificity profiling and the release of diferulates from destarched wheat bran, the recombinant FAEs were characterized as type D FAEs. ScFaeD1 and ScFaeD2 preferably hydrolyzed feruloylated saccharides with ferulic acid esterified to the O-5 position of arabinose residues and showed an unprecedented ability to hydrolyze benzoic acid esters.

Keywords Basidiomycota; feruloyl esterase; benzoic acid ester; agro-industrial side-streams; *Pichia pastoris*

[*] Corresponding author. Tel.: +49 511 762 4585; fax: +49 511 762 4547.

E-mail address: annabel.nieter@lci.uni-hannover.de.