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Scytalidium sp., 3C is a promising toolbox for biomass degradation

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Recently, the strain *Geotrichum candidum* 3C isolated from a rotting rope in 1970s has been found to belong to the genus *Scytalidium* according to the careful genomics analysis. Hemicellulolytic complex of *G. candidum/Scytalidium* sp., 3C was popular in the biotechnology industry in Russia and worldwide. As such, partially purified enzyme preparation consisting of cellulolytic cocktail has been used in pulp and paper industry under the name 'Cellocandin G10x'. Unfortunately, a research boom related to the hemicellulase complex found in this fungus disappeared and has not resumed until recent works published in 2014–2015. We performed a comprehensive analysis of the of the microorganism secretome to show its potential for deconstruction of lignocellulosic biomass. Genomic analysis revealed that the ratio and diversity of CAZy domains coded by *G. candidum/Scytalidium* sp., 3C are comparable to those present in other highly cellulolytic fungi. After growth on different substrates as sole carbon sources, the functionality of several genes encoding endoglucanases, beta-xylanases, cellobiohydrolases, CBMs and other valuable enzymes were confirmed by the combination of enzymatic activity measurements, HPLC, chromophore modified thio-oligosaccharides assays and mass-spectroscopy analysis. The high ability of the extracellular enzyme mixtures produced by *G. candidum/Scytalidium* sp., 3C to saccarify complex plant biomass, wheat bran and sugar beet pulp, indicated a high potential for this stain as a producer of industrial enzyme cocktails.

Biography

Anna A Kulminskaya has completed her PhD from Konstantinov Petersburg Nuclear Physics Institute. She is the Leader of Enzymology Laboratory at Molecular and Radiation Biophysics Division, B.P. Konstantinov Petersburg Nuclear Physics Institute (PNPI) of the National Research Centre "Kurchatov Institute". She has published more than 40 papers in reputed journals and has been serving as an Expert of the Russian Foundation for Basic Research and the Russian Science Foundation.

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