Characterization of H2O-forming NADH oxidase from Streptococcus pyogenes and its application in L-rare sugar production - DTU Orbit (22/09/2019)

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A nicotinamide adenine dinucleotide (NADH) oxidase from Streptococcus pyogenes MGAS10394 (SpNox) was cloned and overexpressed in Escherichia coli BL21 (DE3). The purified SpNox enzyme had optimal pH and temperature of 7.0 and 55 degrees C, respectively, with a K-m of 27.0 mu M and a k(cat)/K-m of 1.1 x 10(7) s (1) M (1). SpNox showed the highest activity among all known NADH oxidases, and site-directed mutagenesis and docking analysis shed light on the molecular basis of its unusually high activity. The characteristics of SpNox may prove to be useful for NAD(+) regeneration in the production of L-rare sugar. (c) 2012 Elsevier Ltd. All rights reserved.

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