B-Glucosidase From Penicillium Purpurogenum: Purification and Properties

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Abstract

B-Glucosidase was purified from the culture supernatant of Penicillium purpurogenum. The purified enzyme was homogeneous on both nondenaturing and sodium dodecyl sulfate (SDS)-polyacrylamide gel electrophoresis. The enzyme is a monomeric glycoprotein with M(r) of 90,000 as determined by gel filtration on Bio-Gel P-300 and SDS-polyacrylamide gels. Two enzyme forms were resolved by chromatofocusing and isoelectric focusing, and the pI values obtained with both methods were 4.2 (major form) and 6.0. The major form was characterised further. Enzyme activity was optimal at pH 3.5 and at 60 degrees C. The enzyme was stable in the pH range 2.5–9.5 for 24 h at 4 degrees C. Kinetic analysis gave Kms of 0.8 mM for cellobiose and 85 microM for p-nitrophenyl-beta-D-glucopyranoside. The enzyme hydrolyses a wide range of substrates including aryl-beta-glucosides, cellobiose, and amygdalin. Glucose inhibits competitively and glucono-delta-lactone is a mixed inhibitor of the enzyme.