Screening of Chitinase-Producing Strains and Purification and Characterization of the Chitinases

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ABSTRACT

Abstract In this study, the chitinase activity of a bacterium strain, T1, was isolated from the soil of Hui-Shan Si in Taipei, which is a Gram ’ s positive rod shaped bacterium. The chitinase activity of the strain T1 was 316 U/L when it was cultured in CB (chitin broth) after 120h. The main hydrolyate is N-acetylglucosamine. The crude enzymes lose activity in acid condition and are sensitive to thermal condition. The optimum temperature and optimum pH of crude enzyme in supernatant are 40℃ and pH 7.0, respectively. The bacterium cultivated in various carbon sources indicated that the chitinase of bacterium was induced by chitin powder. The protein rage of the chitinase activity peak, P2, was purificated by procedures ammonium sulfate precipitation, dialysis and anion exchange of DEAE-sepharose CL-6B. P2 was separated further by sephadex G-100 gel filtration. The P2 has three chitinases analyzed by gel activity staining method, and the molecule weight are 40kDa, 50 kDa and 55 kDa, respecitively. After the purification table, the yield, fold and specific activity of the enzyme are 7.97%, 4.9% and 1.9% by purification procedures. The optium temperarture and pH of the purified enzyme are 50℃ and 7.0, respectively. Keywords: chitinase, N-acetylglucosamine, enzyme purification, anion exchange chromatography, gel filtration chromatography

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Table of Contents

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