

A Study on the bacterial strain BRI 1 as a chitinolytic microorganism isolated from mangrove soil

Abstract

Sabah with its mega-biodiversity is believed to harbour various chitinolytic microorganisms which exhibit optimal chitinase activities at the local ambience. Bacterial strain BRI 1 was recovered from mangrove soil in Kota Belud, Sabah using Chitinase Detection Agar, pH6.5. The strain BRI 1 was placed under the genus *Streptomyces* as its physical morphology showed typical streptomycete appearance on solid medium. This was further supported with the analysis of its amplified ~1.5kb 16S rDNA fragment in which it showed close relation to *Streptomyces* sp. Amplification of family 18 chitinase gene generated an amplicon of 397 bp. Similarly, amplification of family 19 chitinase gene resulted in 342 bp amplicon. Chitinase identity of both amplicons were confirmed in which they showed similarity to chitinase genes from *Streptomyces* sp.. Crude chitinase activity of BRI 1 showed 8.61 Unit, a three-fold higher than the activity exhibited by *Streptomyces griseus* which only showed 2.54 U in a triplicate assay using chitin azure as enzymatic substrate. The data resulted in this report serve as a platform for further investigations involving characterization of the chitinases and manipulation of the chitinase genes.