

Assessment of cellulase and xylanase Production by chryseobacterium sp. Isolated from Decaying Biomass in Alice, Eastern Cape, South Africa

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Abstract : A potential source for low-cost production of value added products is the utilization of lignocellulosic materials. However, the huddle needing breaching would be the dismantlement of the complex lignocellulosic structure as to free sugar base therein. the current lignocelulosic material treatment process is expensive and not eco-friendly hence, the advocacy for enzyme based technique which is both cheap and eco-friendly is highly imperative. Consequently, this study aimed at the screening of cellulose and xylan degrading bacterial strain isolated from decaying sawdust samples. This isolate showed high activity for cellulase and xylanase when grown on carboxymethyl cellulose and birtchwood xylan as the sole carbon source respectively. The 16S rDNA nucleotide sequence of the isolate showed 98% similarity with that of Chryseobacterium taichungense thus, it was identified as a Chryseobacterium sp. Optimum culture conditions for cellulase and xylanase production were medium pH 6, incubation temperature of 25 °C at 50 rpm and medium pH 6, incubation temperature of 25 °C at 150 rpm respectively. The high enzyme activity obtained from this bacterial strain portends it as a good candidate for industrial use in the degradation of complex biomass for value added products.

Keywords : lignocellulosic material, chryseobacterium sp., submerged fermentation, cellulase, xylanase

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