A bifunctional endo- glucanase/xylanase from *Cellulomonas flavigena* with potential use in industrial processes at different pH.

Odilia Pérez-Avalos[1] M. Sc., Leticia M. Sánchez-Herrera[1] M. Sc., Luis M. Salgado[2] PhD , Teresa Ponce-Noyola*[1] PhD.

[1]Departamento de Biotecnología y Bioingeniería, CINVESTAV; Av. IPN # 2508 Col. Zacatenco, C.P. 07000. México, D.F.

[2] Departamento de Bioquímica. CINVESTAV; Av. IPN # 2508 Col. Zacatenco, C.P. 07000. México, D.F.

Abstract

Cellulomonas flavigena CDBB-531 was found to secret a bifunctional cellulase/xylanase with a molecular mass of 49 kDa and pI 4.3. This enzyme was active on Remazol Brilliant Blue-Carboxymethyl cellulose (RBB-CMC) and Remazol Brilliant Blue Xylan (RBB-X). Based on TLC analysis of the degradation products, the cellulase activity produced glucose, cellobiose, cellotriose and cellotetraose from carboxymethyl cellulose (CMC) as substrate. When xylan from birchwood was used, end products were xylose, arabinose and xylobiose. The bifunctional enzyme showed a pH optimum of 6 for cellulase activity and 9 for xylanase activity, which pointed out that this enzyme had separate sites for each activity. In both cases, the apparent optimum temperature was 50°C. The predicted amino acid sequence of purified protein showed similarity with the catalytic domain of several glycosyl hydrolases of family 10.