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Characteristics of free endoglucanase and glycosidases multienzyme complex from *Fusarium verticillioides* Maíra N. de Almeida^a, Daniel L. Falkoski^a, Valéria M. Guimarães^a, Humberto Josué de O. Ramos^a, Evan M. Visser^a, Gabriela P. Maitan-Alfenas^a, Sebastião T. de Rezende^{*a}

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Abstract

A novel multienzyme complex, E1_C, and a free endoglucanase, E2 (GH5), from *Fusarium verticillioides* were purified. The E1_C contained two endoglucanases (GH6 and GH10), one cellobiohydrolase (GH7) and one xylanase (GH10). Maximum activity was observed at 80 °C for both enzymes and they were thermostable at 50 and 60 °C. The activation energies for E1_C and E2 were 21.3 and 27.5 KJ/mol, respectively. The K_M for E1_C was 10.25 g/L while for E2 was 6.58 g/L. Both E1_C and E2 were activated by Mn²⁺ and CoCl₂ while they were inhibited by SDS, CuSO₄, FeCl₃, AgNO₄, ZnSO₄ and HgCl₂. E1_C and E2 presented endo-β-1,3-1,4-glucanase activity. E1_C presented crescent activity towards cellopentaose, cellotetraose and cellotriose. E2 hydrolyzed the substrates cellopentaose, cellotetraose and cellotriose with the same efficiency. E1_C showed a higher stability and a better hydrolysis performance than E2, suggesting advantages resulting from the physical interaction between proteins.

Key words: multienzyme complex; endoglucanase; cellobiohydrolase; xylanase; purification; *Fusarium verticillioides*.

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