TITLE: CELLULASE ACTIVITY AND SUGARCANE BAGASSE HIDROLISE OF THREE ENDOPHYTIC FUNGI ISOLATED FROM *MANIKARA SALZAMANNII*

AUTHORS: FREITAS, L. S. R.; SOUSA, F. S. C.; CONCEICAO, G. R. ; MOURA-COSTA, L. F.; CHINALIA, F. A.

INSTITUTION: UNIVERSIDADE FEDERAL DA BAHIA, INSTITUTO DE CIÊNCIAS DA SAÚDE, SALVADOR, BA (AV. REITOR MIGUEL CALMON, S/N - CANELA, 40110-100, SALVADOR – BA, BRAZIL)

ABSTRACT:

Microbial cellulases have shown their potential application in various industries including pulp and paper, textile, laundry and biofuel production. Several microorganisms are capable of producing cellulases, but only a few show a high spectrum of activity and/or production efficiency for industrial purposes. The aim of this work was to assess the potential of three endophytic fungi production of cellulase that were isolated from the *Manilkara salzmannii* (Maçaranduba). This is a common plant present in the Brazilian Caatinga ecosystem. The congo-dye red test was used for screening the potential cellulase producers from nine isolates and three selected strains (A, E and F) were cultivated in CZAPEK medium amended with carboxymethylcellulose (CMC) or sugarcane bagasse, separately. Enzymatic testing was carried out using cell-free broth. The 3,5-dinitrosalicylic acid (DNS) assay was used to quantify enzymatic activity (1U=1μMproduct/min) in the culturing broth during (i) the incubation period and with variation of (ii) pH and (iii) temperature values. The results showed that a higher value of cellulolytic activity for strain A was observed using 1,5% sugarcane bagasse or 1% CMC (15.57 and 4,84 U, respectively). Strain E showed an opposite response. Maximum activity was observed using CMC (35 U, with 1,5%) than with sugar cane bagasse (19.07 U, with 0,8%). The highest cellulase activity observed for strain F broth testing showed very little difference among the tested substrate. The cellulase activity was of 32.65 and 31.59 U for CMC (1.5%) and sugarcane bagasse (1.2%). Temperature affected enzyme activity differently. Strain A, E and F showed the best activity at 25, 40 and 30 ^{o}C, respectively. The pH of the enzymatic testing matrix has also shown to significantly affect the enzymatic activity. Strain A, E and F showed the best activity at 7, 4 and 5 pH values, respectively. Therefore, endophytic fungi shows significant variation concerning cellulase production with promising industrial application.

Keywords: endophytic fungi, cellulase, DNS, sugarcane bagasse and CMC

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