

TITLE: PRODUCTION OF ENDOGLUCANASE FOR A NEW SPECIES OF THE GENUS *PENICILLIUM*, *LANATA-DIVARICATA* SECTION

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ABSTRACT:

One of the enzymes that make up the cellulolytic complex are the endoglucanases - EC 3.2.1.4 (1,4-β-D-glucan-4-glucanohydrolase). They randomly hydrolyze the glycosidic bonds of the amorphous structure of the cellulose fiber releasing oligosaccharides with different degrees of polymerization and new reducing and non-reducing terminals. These enzymes can be used as biocatalysts in a series of industrial processes and may be produced by different microorganisms mainly filamentous fungi. The objective of this work was to evaluate the production of endoglucanase by a new species of the genus *Penicillium*, section *Lanata Divaricata*. Fungi were isolated from the leaf litter of the Guaibim sandbank in Bahia State on selective medium containing microcrystalline cellulose as sole carbon source. Five isolates of a new species of the genus *Penicillium* sp. were obtained from patches of vegetation on the sandbank. The genetic diversity of these isolates was analyzed by Rep-PCR using markers ERIC (Enterobacterial Repetitive Intergenic Consensus) and REP (Repetitive Extragenic Palindromic). The identification of the new species was performed by morphological analysis and molecular phylogeny by the sequencing of the beta-tubulin and calmodulin regions. The production of the enzyme was evaluated in Petri dishes. Mycelial discs of 8 mm from the colonies of each isolate were transferred to the center of Petri dishes with mineral salts medium supplemented with carboxymethylcellulose (CMC) in triplicates. After 6 days of incubation at 28 °C in BOD the plates were stained with Congo Red. The Enzymatic Index (EI) was determined by the ratio of the halo diameter of hydrolysis to the diameter of the colony. Genetic analysis showed that the isolates had the same genetic profile when the ERIC marker was used, however with the REP marker the genetic profile of the isolate *Penicillium* sp. 10MOS was distinct from the other isolates. Morphological analysis and molecular phylogeny confirmed that this yet undescribed species is closely related to *P. pedernalense*. EI did not vary among isolates 3-6MON (1,01), 3-7MON (1,01), 3-8MON (1,01), 10MOS (1,04) and. 3-1MTN (1,01). The production of endoglucanases by this new species indicates its potential for biotechnological applications.

KEYWORDS: biotechnology, cellulase, enzyme, Rep-PCR

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