

TITLE: FUNGI OF SOIL: PRODUCERS OF AMYLASE, PROTEASE AND CELLULASE FROM THE SEMIARID REGION OF PERNAMBUCO

AUTHORS: MORAES, I.R.R.; ALVES, V.S.; SIQUEIRA, V.M.

INSTITUTION: UNIVERSIDADE FEDERAL RURAL DE PERNAMBUCO, UNIDADE ACADÊMICA DE SERRA TALHADA, AV. GREGÓRIO FERRAZ NOGUEIRA, S/N, CEP: 56909-535, SERRA TALHADA -PE, BRASIL

ABSTRACT:

Fungi are classified as the most important and useful microorganisms in the production of enzymes by industries. When compared with enzymatic sources of animal or vegetable origin, they present low cost of production, as well as biochemical diversity and facility in genetic manipulation. The production of enzymes is one of the areas of expanding biotechnology, which annually moves billions of dollars. In this way, the objective of this work was to evaluate the enzymatic activity of different fungi previously isolated from preserved soil collected Unidade de Conservação Parque Estadual Mata da Pimenteira, Serra Talhada-PE. A total of 28 isolates were submitted to enzymatic activity tests (protease, cellulase and amylase). For this, each isolate was replicated in triplicate in culture media specific for the production of each enzyme containing the substrates: starch for amylase (resublimated iodine as revealer), carboxymethylcellulose for cellulase (lugol solution as revealer) and gelatin and protease milk (formation of degradation halo). The enzymatic reaction was detected by the chemical modification of the culture medium, this reaction was positive when the formation of a translucent halo was visualized. As a result, for protease the isolate 21 identified as *Aspergillus* sp. (Nigri) proved to be the best producer of proteolytic enzymes, with a halo of 12 mm. As for cellulase production, most of the fungi presented positive activity, with an enzymatic index (IE) of 5 mm to 34 mm, especially *Penicillium* sp. (isolated 05) which presented halo of 31 mm. Twelve isolates showed activity for amylase, with a significant *Aspergillus* sp. (isolated 10) with halo of amylolytic activity of 45 mm. Studies report that soils of semi-arid region lose fungal diversity due to the high temperatures of the environment as well as anthropic actions that degrade these ecosystems. However, the present work showed that there is a variety of filamentous fungi in soils preserved with native forest of this region, being outstanding the genera *Aspergillus* sp. and *Penicillium* sp. as good producers of enzymes and with high industrial biotechnological potential.

Keywords: enzymatic activity, bioprospecting, *Aspergillus*, *Penicillium*.

Development Agency: