

**TITLE:** MORPHO-MOLECULAR CHARACTERIZATION OF A NEW SPECIES OF THE *Penicillium* GENUS ISOLATED FROM BRAZILIAN SAVANNAH L-ASPARAGINASE PRODUCER

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L-asparaginase is an important enzyme in the pharmaceutical field used as a treatment for Acute Lymphoblastic Leukemia (ALL) due to its ability to hydrolyze L-asparagine into L-aspartate and ammonia. The preparations of this enzyme for clinical use are derived from a bacterial source and its use is often associated with serious adverse reactions. Therefore, the search for new sources of L-asparaginase is important. The objective of this work was to the identification of the species the fungus *Penicillium* sp. producer of L-asparaginase. The new fungus was previously isolated from the soil of the Brazilian Savannah and identified as producing the enzyme L-asparaginase. In the identification of the species, the monohifalic culture was used for extraction of the genetic DNA and amplification of the ITS regions (Internal Transverse Spacer) and RPB2 (Second Largest Subunit of RNA Polymerase II). Phylogenetic analysis by Bayesian Inference with multigenic combination and the morphological characterization revealed the isolate under study with potential of new species, in order to be presented following the norms of the International Code of Nomenclature for Algae, Fungi and Plants. Submerged fermentation was prepared based on Czapek Dox modified (CDM) medium (L-proline 1.71 %, L-asparagine 1.38 %, NaNO<sub>3</sub> 1.99 %, glucose 0.65 %, KH<sub>2</sub>PO<sub>4</sub>.7H<sub>2</sub>O 0.0152 %, KCl 0.52 %, MgSO<sub>4</sub>.7H<sub>2</sub>O 0.52 %, traces of CuNO<sub>3</sub>.3H<sub>2</sub>O, ZnSO<sub>4</sub>.7H<sub>2</sub>O, FeSO<sub>4</sub>.7H<sub>2</sub>O) pH 6.2 with 50 mL and 5 mm mycelial disc for four days at 120 rpm and 30°C. L-asparaginase activity was assayed according to Drainas et al. (1977) [1] in triplicate. The result obtained with the cultivation in CDM submerged medium showed of ASNase activity of 0.87 U/g<sub>cell</sub>. This study showed the morpho-molecular identification of a new fungus of the genus *Penicillium* sp. isolated from the soil of the Brazilian Savannah L-asparaginase producer.

**Keywords:** L-asparaginase, filamentous fungus, Savannah, leukemia.

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