TITLE: SCREENING OF SUBSTRATES FOR PROTEASE PRODUCTION FROM *Streptomyces parvulus* DPUA 1573

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ABSTRACT:

Proteases are enzymes that hydrolyzes peptide bonds of proteins, and is of great importance in the global market for industrial enzymes with a positive position in the financial global market which is projected to reach U$ 10,519 millions of dollars by 2024, recording a compound annual growth rate of 5.7% from 2018 to 2024. Among the proteolytic enzymes, the fibrinolytic proteases are remarkable, being responsible for the degradation of fibrin, the main protein component of blood clots. There is a growing search for efficient and low cost methodologies for the purification of these enzymes, since any drug requires a high degree of purity and specificity to avoid immunological reactions. The genus Streptomyces are noteworthy for the ability to produce different biomolecules, especially proteases. Therefore, the objective of this study was to select the best agricultural residue (orange peel, passion fruit flour and soybean flour) for protease production by *Streptomyces parvulus* DPUA 1573 using a factorial design 2^2, varying the flour concentration by using (1, 3 and 5%) at 28° C to 200 RPM. The protease activity was determined at 48 hours of production. The assays with the higher protease activity, using as substrate, where the assays containing 1 and 5% of passion fruit peel flour, generating 33.7 and 33.9 U/mL of protease activity, respectively. The fibrinolytic activity was also evaluated on the assays with the best protease activity obtaining 11.4 U/mL and 15.4 U/mL respectively, using fibrin as substrate. The fibrin plate methodology was also performed, showing for both conditions 20mm of a fibrin lysis zone of degradation. According to the statistical analysis, the only variable that was significant in the production was the type of nitrogen source. Therefore, these results evidenced a new source for the production of fibrinolytic protease for its possible application as a thrombolytic agent.
Keywords: Streptomyces, proteases, agricultural residues, fibrin.

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