PRODUCTION AND BIOCHEMICAL CHARACTERIZATION OF A PROTEASE FROM *ASPERGILLUS ORYZAE*: APPLICATION IN PROTEIN HYDROLYSIS FOR INCREASING THE ANTIOXIDANT POWER OF BIOACTIVE PEPTIDES.

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Proteases are a highly complex group of enzymes that offer a variety of applications in the food and beverage industries. This study reports the production optimization and biochemical characterization of a protease obtained from *A. oryzae* LBA 01 under solid state fermentation for application in protein hydrolysis, and a study of the antioxidant properties of the hydrolysates. A Plackett-Burman statistical design was used to study the effect of seven variables on protease production. The enzyme was partially purified by ammonium sulfate precipitation and dialysis, and the freeze-dried preparation used to determine the following biochemical characteristics and protein hydrolysis. The antioxidant activities of the hydrolysates were measured by the ORAC-FL and DPPH assays. *A. oryzae* LBA 01 produced protease optimally using wheat bran as substrate, 50.0% initial moisture content, 10^7 spores.g^-1 inoculum, peptone (2% w/w), yeast extract (2% w/w), and incubation at 23°C for 72h of fermentation. The biochemical characterization showed that the enzyme was more active in the pH range from 5.0-5.5 and stable from pH 4.5-6.0. The optimum temperature for activity was from 55-60°C and the enzyme was stable in the range from 35-45°C. The values for Km (mg.mL^-1) and Vmax (U.g^-1) were, respectively: for azocasein (2.5 and 5,139), for casein (4.9 and 5,446) and for hemoglobin (0.7 and 2,764). The protease from *A. oryzae* LBA 01 showed good potential for protein hydrolysis, increasing the natural antioxidant power of soy protein isolate, bovine whey protein and albumin.