**Title: Purification and properties of a xylanase from *Aspergillus foetidus* cultivated on soybean residue.**

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**Abstract text:**

In recent years, increasing concern over preserving resources and environment has initiated a growing interest in producing microbial enzymes.[1] Among the producers of enzymes, filamentous fungi are particularly interesting producers since they excrete xylanases into the medium. Xylanases from microorganisms have attracted a great deal of attention in the last decade because of their biotechnological potential in various industrial processes such as food, feed, saccharification of biomass and bioblanching of kraft pulps. Commercial xylanase preparations have been obtained, at an industrial scale, mainly from fungi of the genera *Trichoderma* and *Aspergillus*. Among the genera *Aspergillus*, the *A. niger* and *A. oryzae* are the most commonly used industrial for the production of pharmaceuticals, food ingredients and enzymes. For it, the aim of this study was to purify a xylanase from *Aspergillus foetidus* isolated from Brazilian Savanah, to study structural and functional aspects of enzymes. Pretreated soybean residue was used as an alternative carbon source for the submerse fermentation using *Aspergillus foetidus* and the xylanase production. Enzyme was produced by cultivation of the microrganism *A. foetidus* in submerged medium containing soybean residue as the main source of carbon at 120 rpm, 28°C for 7 days. The filtered culture supernatant was fractionated by ultrafiltration, which resulted in the isolation of a homogeneous low-molecular-weight xylanase with a mass of 14,1 kDa as determined by sodium dodecyl sulfate-polycrilamide gel electrophoresis (SDS-PAGE). Enzyme catalysis was more efficient at 50°C and pH 5.0. The enzyme stability was improved at pH 5.4 with the retention of 70% of activity after 4h (50ºC) and nearly 100% of activity after 48h (30°C). Using birchwood xylan as substrate, the enzyme showed a $K_m$ of 26.320 mg/mL and specific activity of 725 units/mg protein at 50°C. Considering all this information, *Aspergillus foetidus* produces significant amount of xylanase when grown on soybean residues. The ultrafiltration and polyacrylamide gel electrophoresis data revealed the existence of a xylanase with 14,1 kDa and this enzyme can be efficiently purified in two steps by ultrafiltration. The results presented show the importance of studying the behavior of xylanase for biotechnological applications.

**Keywords:** Xylanase; purification; *Aspergillus foetidus*; soybean residue; biotechnology.

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