ENZYMES PRODUCTION BY SOLID STATE FERMENTATION USING CORN COBS AS SUBSTRATE AND THEIR RECUPERATION BY FLEXIBLE CHAIN POLYMERS AND NATURAL POLYELECTROLYTES

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Enzyme production is a growing field in biotechnology with a great industrial interest. The use of biotechnological processes such as the Solid State Fermentation (SSF) allows the use of fungal microorganisms such as *Trichiderma harzianum* and *Aspergillus niger* In addition the use of agroindustrial wastes such as corn cob can be a possibility if this is used as a source of carbon for growth of the microorganism and production of enzymes such as Cellulase, Xylanase and Invertase, which are well known use due to the large range of applications in the chemical, pharmaceutical, textile, paper and food industries.

Although the extracellular accumulation of these enzymes during the SSF facilitates their recovery, most of the methodologies used for purification are long, expensive and underperforming, The aqueous two-phase systems (ATPS) and precipitation systems of natural polyelectrolytes represents an attractive bioseparative technique for purification of enzymes with industrial interest when high purity is not required, or the initial purification steps for applications where purity is essential. The ATPS are ideal for the recovery of enzymes and other biomolecules due to the low interfacial tension and high water content, which provides a favorable environment for the preservation of the biological activity of labile molecules (Carvalho et al. 2007). The process of precipitation formation of an ion-protein polymer requires a thorough analysis of environmental variables and the biomolecule (which must preserve its conformational integrity when redissolved pellet). It should also be noted that should preserve intact the catalytic activity when the protein is an enzyme involved. The precipitation of enzymes using charged polymers has benefits over traditional methods regarding the costs and time of purification. The same can be used as a first stage extractive or clarified or as single phase for those industrial processes which do not require high degrees of purity.

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