

Production of Lignocellulosic Enzymes by *Bacillus safensis* LCX Using Agro-Food Wastes in Solid State Fermentation

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Abstract : The increasing demand for renewable fuels and chemicals is pressuring manufacturing industry toward finding more sustainable cost-effective resources. Lignocellulose, such as agro-food wastes, is a suitable equivalent to petroleum for fine chemicals and fuels production. The complex structure of lignocellulose, however, requires a variety of enzymes in order to degrade its components into their respective building blocks that can be used further for the production of various value added products. This study aimed to isolate bacterial strain with the ability to produce a variety of lignocellulosic enzymes. One bacterial isolate was identified by 16S rRNA gene sequencing and phylogenetic analysis as *Bacillus safensis* LCX found to have CMCase, xylanase, manganese peroxidase, lignin peroxidase, and laccase activities. The enzymes production was induced by growing *Bacillus safensis* LCX in solid state fermentation using wheat straw, wheat bran, and corn stover. The activities of enzymes were determined by specific colorimetric assays. This study presents *Bacillus safensis* LCX as a promising source for lignocellulosic enzymes. These findings can extend the knowledge on agro-food wastes valorization strategies toward a sustainable production of fuels and chemicals.

Keywords : *Bacillus safensis* LCX, high valued chemicals, lignocellulosic enzymes, solid state fermentation

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