

## Study of Three Xylanolytic Enzymes in A Yeast Strain of *Aureobasidium* Sp.

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**Background & Objectives:** Xylanolytic enzymes from microorganisms have attracted a great deal of attention in the last decade, particularly because of their biotechnological potential in industrial processes such as food, feed, pulp and paper industries. In this study, a yeast strain was isolated from Pepper (*Capsicum annum*) and examined for xylanase production by growing on basal medium containing 1% xylan as the main carbon source at 30°C and xylanase activity visualized using Congo red staining. Extracellular enzymatic activity was assessed by supernatant of the culture broth using Cup-plate.

**Methods:** The positive xylanolytic strain was characterized morphologically, biochemically and physiologically according to the standard methods. Molecular identification of the isolate was performed by amplification and sequencing of D1/D2 domain of 26S rDNA. Besides xylanolytic activity, the carbohydrase enzymatic activity profile of this strain on solid medium was determined. Quantitative measurement of xylanolytic activity including  $\alpha$ -L-arabinofuranosidase and  $\beta$ -xylosidase assay were carried out based on hydrolysis chemical substrates of 4-nitrophenyl  $\alpha$ -L-arabinofuranoside and 2-nitrophenyl xylaopyranoside and the activity calculated using standard curves generated by 4-nitrophenyl. Endoxylanase activity was determined using Miller's dinitrosalicylic acid Methods and xylose release in the culture broth was tracked using appropriated methods.

**Results:** This survey, the yeast-like microorganism was identified as a member of *Aureobasidium* sp. with high xylanolytic activity on solid medium and extracellular secretion of the enzyme was confirmed. The isolate also has amylase activity but no cellulase activity was detected. The 72 hours culture produced 2.73 U/ml Endoxylanase activity but low level of  $\beta$ -xylosidase (0.179 U/ml) and (0.063 U/ml)  $\alpha$ -L-arabinofuranoside activities. The main breakdown product of xylan hydrolysis was xylose with trace amount of oligosaccharides within 30 minutes of hydrolysis.

**Keywords:** *Aureobasidium* Sp.; Endo- $\beta$ -1; 4- Xylanase; Enzymatic Activity Profile; Xylan Hydrolysis Product