

## **Production of cellulases and xylanase by *Aspergillus fumigatus* SK1 using untreated oil palm trunk through solid state fermentation**

### **ABSTRACT**

Direct utilization of untreated oil palm trunk (OPT) for cellulases and xylanase production by *Aspergillus fumigatus* SK1 was conducted under solid-state fermentation (SSF). The highest activities of extracellular cellulases and xylanases were produced at 80% moisture level, initial pH 5.0,  $1 \times 10^8$  spore/g (inoculum) with 125 m of OPT as sole carbon source. The cellulases and xylanase activities obtained were 54.27, 3.36, 4.54 and 418.70 U/g substrates for endoglucanase (CMCase), exoglucanase (FPase), -glucosidase and xylanase respectively. The crude cellulases and xylanase required acidic condition to retain their optimum activities (pH 4.0). Crude cellulases and xylanase were more stable at 40°C compared to their optimum activities conditions (60°C for FPase and 70°C for CMCase, -glucosidase and xylanase). SDS-PAGE and zymogram analysis showed that *Aspergillus fumigatus* SK1 could secrete cellulases (endoglucanase, exoglucanase and -glucosidase), xylanase and protease. Enzymatic degradation of alkaline treated OPT with concentrated crude cellulases and xylanases resulted in producing polyoses.

**Keyword:** Oil palm trunk (OPT); Cellulases; Xylanase; Solid-state fermentation; Saccharification