

## **$\beta$ -Mannanase production by *aspergillus flavus* in solid-state fermentation of palm kernel cake**

### **Abstract**

$\beta$ -Mannanase production in batch solid-state fermentation (SSF) of palm kernel cake (PKC) was evaluated with flasks and a laterally aerated moving bed (LAMB) bioreactor using *Aspergillus flavus* UMS01. Optimum condition for flask SSF was 110 % moisture content, initial pH 6, 30 °C and particle size 855  $\mu\text{m}$ , yielding 383  $\text{U g}^{-1}$  dry PKC after 120 h. Under the same condition and particle size <5 mm, SSF in LAMB produced 276  $\text{U g}^{-1}$  dry PKC at an optimal gas flow of 4.4  $\text{m s}^{-1}$  in just 96 h. Optimal  $\beta$ -mannanase production was consistent with highest fungal growth and mannose production; to support increasing fungal growth, secretion of  $\beta$ -mannanase increased to degrade mannans in PKC, producing mannose for microbial consumption. *A. flavus* UMS01 showed promising attributes as a  $\beta$ -mannanase producer via SSF of PKC in flasks and LAMB bioreactor.