β-Mannanase production by *aspergillus flavus* in solid-state fermentation of palm kernel cake

Abstract

β-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 μm, yielding 383 U g^{-1} dry PKC after 120 h. Under the same condition and particle size <5 mm, SSF in LAMB produced 276 U g^{-1} dry PKC at an optimal gas flow of 4.4 m s^{-1} in just 96 h. Optimal β-mannanase production was consistent with highest fungal growth and mannose production; to support increasing fungal growth, secretion of β-mannanase increased to degrade mannans in PKC, producing mannose for microbial consumption. *A. flavus* UMS01 showed promising attributes as a β-mannanase producer via SSF of PKC in flasks and LAMB bioreactor.