

**OPTIMIZATION OF FERMENTATION CONDITIONS FOR
 α -AMYLASE PRODUCTION FROM
ASPERGILLUS ORYZAE-B₁₂**

**Vasanthe Senthuran, Vasanthy Arasaratnam
and K. Balasubramaniam**
Department of Biochemistry, Faculty of Medicine
University of Jaffna, Sri Lanka

In baking and food processing industries fungal α -amylase is preferred due to its compatibility, which has led to FDA to approve its use in food processing industries. For the industrial production of enzymes, it is important to improve the cultural conditions to obtain better production of enzymes. Optimization of age of the spore inoculum was carried out with 4, 6, 9, 11, 13 and 27 days old spores (5×10^7 spores g medium⁻¹) in the medium containing soy flour (30 g), rice bran, 5.0 g and mineral solution (30 ml, H₂O; MgSO₄, 0.062 g l⁻¹ and 0.01 g l⁻¹, CuSO₄ 5H₂O). Four days old spores gave highest α -amylase activity (901.3 U g DMM⁻¹) than the older spores at 96h. Then with 4 days old spore inoculum optimum number of the spores in the inoculum was also determined by taking the number of spores from 4.5×10^5 to 4.5×10^9 spores g medium⁻¹ at 10 difference and 4.5×10^8 spores g medium⁻¹ gave highest production (1439.0 U g DMM⁻¹) of α -amylase at 96h. When soy flour and rice bran were used in different ratios of 5:1, 4:1, 3:2, 1:4 and 0:5, maximum α -amylase activity was obtained 1448.5, 1517.8, 1920.9, 2220.0 and 236.6 U g DMM⁻¹ respectively at 96h. The substitution of rice bran with wheat bran (soy flour to wheat bran ratios of 5:1, 4:1, 3:2, 1:4 and 0:5), led to a reduction in time from 96 to 48h and activities obtained respectively were 1522.4, 1650.3, 1893.8, 217.8 and 1240.3 U g DMM⁻¹. The total sugar and protein were assayed for all the media used and carbohydrate / protein ratio was maintained at the same level by adding purified starch for all the medium used in both the above experiments.