

**OPTIMIZATION OF A MEDIUM FOR *Bacillus licheniformis* 6346  
TO PRODUCE ALPHA-AMYLASE BY SOLID STATE FERMENTATION**

**W.Sudharshan Tambyrajah, Vasanthi Arasaratnam and  
K.Balasubramaniam**

**(Department of Biochemistry, Faculty of Medicine, University of Jaffna.)**

A solid state media for *Bacillus licheniformis* 6346 was formulated. The basic medium contained ( $\text{gkg}^{-1}$ ), rice husk, 280; soluble starch, 50;  $(\text{NH}_4)_2\text{HPO}_4$ , 15;  $\text{Na}_2\text{HPO}_4 \cdot 2\text{H}_2\text{O}$ , 5; KCl, 3;  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ , 0.07 and 650ml water. In this basic medium maximum  $\alpha$ -amylase activity ( $389 \text{ U DMB}^{-1}$ ) was obtained at 96h. To the basic medium either gingily oil or coconut or both were added to find the effect of the oils on enzyme production (total oils added,  $\text{ml kg}^{-1}$  was 12 ) and maximum  $\alpha$ -amylase was produced in the medium containing gingili oil ( $9 \text{ ml kg}^{-1}$ ), and coconut oil ( $3 \text{ ml kg}^{-1}$ ). To this media either  $(\text{NH}_4)_2\text{HPO}_4$  or  $(\text{NH}_4)_2\text{SO}_4$  or a mixture of  $(\text{NH}_4)_2\text{HPO}_4$  and  $(\text{NH}_4)_2\text{SO}_4$  ( $15 \text{ g kg}^{-1}$ ) was added and  $(\text{NH}_4)_2\text{HPO}_4$  was suitable for enzyme production at 4th day ( $792 \text{ U DMB}^{-1}$ ). To find a suitable carbon source, rice flour, corn flour, soya meat powder, wheat flour and soluble starch ( $90 \text{ g kg}^{-1}$  total reducing sugar content in the medium) were selected and the media having either rice flour or soya meat powder gave highest enzyme production ( $1056 \text{ U DMB}^{-1}$  and  $1071 \text{ U DMB}^{-1}$ ) at 4th day. The optimum rice flour or soya meat powder concentration in the media was  $50 \text{ g kg}^{-1}$  medium. Supplementation of  $23 \text{ g kg}^{-1}$  soluble starch to the media produced highest enzyme at 4th day. From these experiments the optimized solid state fermentation media for  $\alpha$ -amylase production should have rice bran, either rice flour or soya meat powder, soluble starch, gingelly oil and coconut oil and minerals.