

AMYLOGUCOSIDASE PRODUCTION FROM ASPERGILLUS
NIGER IN SHAKER FLASKS AND ITS KINETIC CHARACTERISTICS

M. Ramadas and K. Balasubramaniam
Faculty of Medicine, University of Jaffna.

Aspergillus niger (Strain CISIR - N4) was grown in submerged culture in an orbital shaker and under aeration. The culture agitated in an orbital shaker was more effective in enzyme production. On the fifth day the enzyme activity in the medium reached a maximum and was $7 \mu\text{moles/ml/min}$, whereas under aeration the enzyme activity was low ($0.18 \mu\text{moles/ml/min}$).

Batchwise production of amyloglucosidase using the same mycelium over a period of time using varying starch concentrations was tried. The enzyme activity reached a peak level by about 24 hours, but with the age of the mycelium the amount of enzyme secreted decreased. An increase in substrate concentration did not reverse this trend.

The culture filtrate also contained alpha amylase as determined by Phadebas amylase test method (Pharmacia, Sweden). The rate of glucose production of this culture filtrate containing alpha amylase and glucomylase was linear up to 40 min under our assay conditions.

The pH optimum of the enzyme was 4.0. The enzyme showed 83% of the maximum activity between pH 2.4 and 4 but retained only 22% of the maximum activity at pH 6.7.

Although the temperature optimum was 60°C the enzyme lost 20% of the activity in 2 hours and 67% of the activity in 24 hrs at 60°C . The enzyme lost 20% and 15% of the activity in 24 hrs. at 50°C and 45°C respectively. At 37°C it retained 100% activity. The enzyme was purified by DEAE-Cellulose Chromatography. The recovery was 58% and specific activity increased by three fold.