OPTIMIZING CULTURE CONDITIONS FOR THE PRODUCTION OF AMYLOGLUCOSIDASE FROM A FUNGUS IN LICHEN NICHE AND ITS KINETIC CHARACTERISTICS

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The use of starch in potato, corn and manioc as carbon source was investigated. When the starch provided was 1.8% no significant difference in amyloglucosidase production was observed. Hence starch in manioc was used as carbon source in rest of the experiments. The fungus isolated from lichen niche was grown in a medium containing starch (2% from manioc), 0.2% w/v $(NH_4)_3PO_4$ and 0.5% w/v peptone, without maintaining a cons-

tant pH. Enzyme activity reached a peak level and then decreased as the pH decreased from 6.0 to 1.8. As the decrease in activity could be due to denaturation of enzyme at low pH, culture medium was improved with 0.25% w/v K_3PO_4 and 0.36% w/v $CaCO_3$ which helped not only to maintain the pH at 6, but also increased the enzyme activity. Enzyme production was further increased by addition of 2% w/v soya bean powder to the medium.

Continuous batchwise production of amyloglucosidase was carried out over a period of 17 days. The amyloglucosidase production reached a peak in 48h and hence four batches of enzyme were produced in 13.5 days. The enzyme activity decreased at the 5th cycle on the 17th day. With continuous culturing, the medium also changed colour from yellow to pink.

The pH stability studies showed that the amyloglucosidase at its optimum ph (5.1) and temperature ($52^{o}C$), lost 19% and 89% of the activity in 0.5h and 49 h respectively. The enzyme retained 80% of its activity for 5h between pH 4.9 and 7.1.