2nd International Conference of Multidisciplinary Approaches (iCMA), 2015
Faculty of Graduate Studies,
University of Sri Jayewardenepura,
Sri Lanka
ISSN: 2386 – 1509

PRODUCTION OF EXTRACELLULAR AMYLASE BY *ASPERGILLUS NIGER* UNDER LIQUID SUBMERGED FERMENTATION USING JACK FRUIT RAG AS THE CARBON SOURCE

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Amylases find potential application in a number of industrial processes such as food, detergent, textiles, brewing and paper industries. Further, they would be potentially useful in the pharmaceutical and fine chemicals industries. A wide range of micro-organisms such as bacteria and fungi namely Aspergillus and Trichoderma sp are used for the industrial production of amylases. Several carbon sources such as banana peel, wheat bran, wheat straw, rice straw, rice bran, corn bran, rice husk, maize bran, sugarcane bagasse , pomegranate peel , pine apple peel, rye grains, vegetable waste etc. have been used as carbon sources for the production of amylase

In this study, locally available inexpensive agricultural waste Jack fruit rag powder was used as the carbon source for extracellular amylase production by Aspergillus niger under submerged fermentation. Various parameters such as incubation period, pH of the medium , substrate level and nitrogen source were changed to establish the optimum conditions for amylase production. Maximum enzyme production was observed in 5 d ays old cultures which was grown at pH 6.5 and ambient temperature 30°C. Optimum concentration of jack fruit rag powder for amylase production was 20gL-1 . As nitrogen sources NH4Cl, KNO3 casein and beef extract were tested. Except NH4Cl all other sources enhanced the amylase production. Kinetics of extracellular and intracellular amylase production with the culture growth was also studied. Extracellular amylase production was always found to be higher than that in intracellular. Crude amylase obtained from culture filtrate was partially purified with by ammonium sulphate fractionation followed by DEAE Cellulose chromatography. Yield of enzyme was 8400unts/g. Thus purified enzyme exhibited optimum pH and incubation temperature at pH 6 and 60°C respectively. Optimum activity at 60°C, and pH 6 indicates its suitability for various industrial applications such as starch liquefaction. Shorter incubation period and lower substrate cost offer the potential for inexpensive production of amyl ase, making the process industrially and economically feasible.

Keywords: *amylase, submerged fermentation, jack fruit rag powder, Aspergillus niger,*