

# ABSTRACT

The present study deals with the optimization of cultural conditions for the production of citric acid by mutant strain of *Aspergillus niger* NG-110. Shake flask technique was employed to investigate the optimum conditions for maximum production of citric acid. Ferrocyanide treated (200ppm) cane molasses medium containing sugar 150 g/l, was used as the basal fermentation medium. Different cultural conditions such as temperature (30°C), alcohol (1% methanol), inorganic nitrogen (0.20%  $\text{NH}_4\text{NO}_3$ ) and calcium chloride (2.0%) were optimized for enhanced citric biosynthesis. Maximum amount of anhydrous citric acid ( $81.21 \pm 0.2$  g/l) was obtained, 168 hours after inoculation, with a sugar consumption of  $92.20 \pm 3.5$  g/l. The dry weight of mycelia was  $20.40 \pm 0.2$  g/l. On the basis of comparison of kinetic parameters namely the product and growth yield coefficients ( $Y_{p/s}$ ,  $Y_{p/x}$ ), volumetric rates ( $Q_p$ ) and specific rate constants ( $q_p$ ), it was observed that mutant strain of *Aspergillus niger* NG-110 was a faster growing organism and had the ability to hyper produce citric acid.