

## ABSTRACT

In the present study, twelve strains of *A. niger* were isolated from the soil and screened for citric acid production by submerged fermentation in shake flasks using conidial inoculum. Of all the isolates examined, *A. niger* IIB-A6 gave the maximum citric acid production ( $23.32 \pm 1.44$  g/l), following growth on 150 g/l sugar and incubated at 30°C for 168 h. Dry cell mass and sugar consumption were  $14.59 \pm 1.19$  and  $109.53 \pm 0.80$  g/l, respectively. Mycelial morphology was in the form of small round pellets. A comparison was also made between sweet potato and maize starch hydrolysates. Sweet potato starch was found as a better substrate. Among the kinetic parameters especially product formation rates i.e.,  $Y_{p/x}$  (1.96 g/g cells),  $Q_p$  (0.13 g/l/h) and  $q_p$  (0.014 g/g/h) were 8-10 folds higher with sweet potato starch than the maize starch. The cultural conditions such as sugar conc. 15 %, incubation period 168 h, pH 6.0, inoculum size (2.0 %, v/v) were found optimum. The effect of the addition of methanol (3.0 %, v/v) as a stimulant and potassium ferrocyanide (200 ppm) as a metal chelating agent was determined. An overall increase of 51 % in citric acid production ( $45.42 \pm 1.03$ ) was observed with optimal conditions.