

ABSTRACT

The present study deals with the effect of potassium ferrocyanide on citric acid fermentation by *Aspergillus niger* using sucrose salt media. For this purpose, different concentrations of potassium ferrocyanide (0-200 ppm) were added at different intervals of time such as 0, 24, 48, and 72 h of the conidial inoculation. Among all the concentrations the maximum production of citric acid (36.40 g/l) was observed in the presence of 40 ppm potassium ferrocyanide when added 24 h after the inoculation. The increase was about 2.2 fold over that of control (16.00 g/l). Different metal complexing agents such as CDTA and EDTA were also employed to determine their effect on citric acid fermentation and 1.00 mM of EDTA added at the time of inoculation produced maximum citric acid (30.00 g/l) which was about 1.5 fold increase with that of control (16.20 g/l).

The effect of potassium ferrocyanide on morphology and growth of *Aspergillus niger* was also studied and it was found that with the increase in potassium ferrocyanide dry cell mass was decreased gradually. In the presence of potassium ferrocyanide the organism grow in the form of round smooth pellets the diameter of the pellets decreased with the increase in potassium ferrocyanide concentration. Initial pH (3.5), sugar conc. (150 g/l) and incubation period (168 h) were also optimized. The kinetic parameters such as growth yield coefficients ($Y_{p/s}$, $Y_{p/x}$, $Y_{x/s}$ in g/g), volumetric rates (Q_p , Q_s , Q_x in g/l/h), and specific substrate rate (q_p , q_s in g/g cells/h) of the research work were also undertaken. The value of Q_p is highly encouraging in the presence of potassium ferrocyanide.