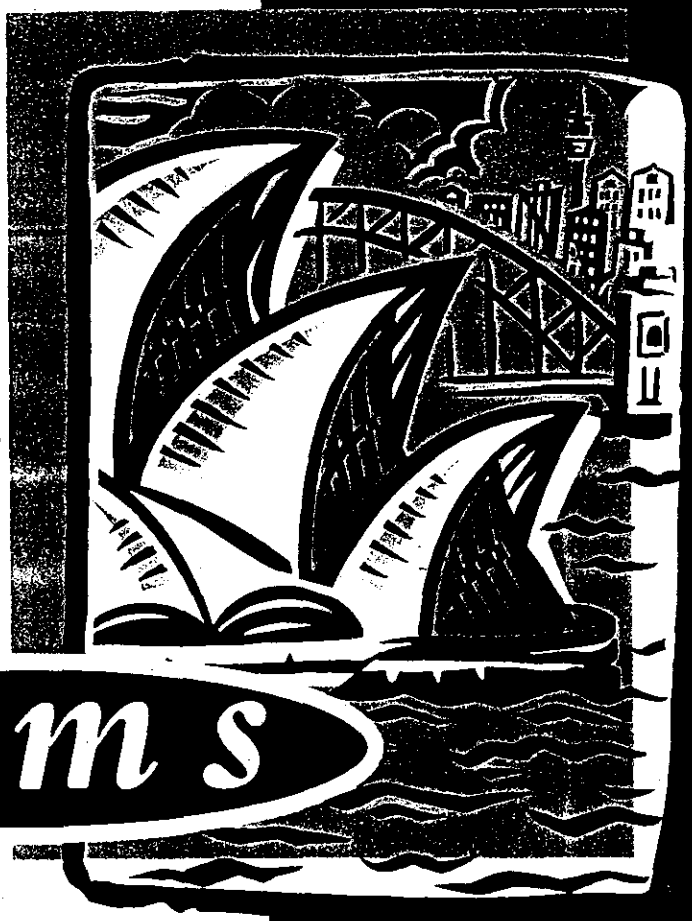
IX ICBAM
IXth INTERNATIONAL
CONGRESS OF
BACTERIOLOGY
& APPLIED
MICROBIOLOGY

INTERNATIONAL
UNION OF
MICROBIOLOGICAL
SOCIETIES



i u m s

IX ICM
IXth INTERNATIONAL
CONGRESS OF
MYCOLOGY

16 - 20 AUGUST 1999

SYDNEY CONVENTION CENTRE,
DARLING HARBOUR,
SYDNEY AUSTRALIA

morphology from normally dividing cells to filaments of increasing lengths.

BPO15.14

1,3-Propanediol continuous production by *Clostridium butyricum* VPI 1718: effect of dilution rate and substrate concentration

M Gonzalez-Pajuelo*[1], A P Ribeiro-Cruz[1], C M Sousa-Monagas[1], J C Andrade[1], I Vasconcelos[1]
[1]*Escola Superior de Biotecnologia*

1,3-propanediol is a very versatile degradable intermediate compound for the synthesis of heterocycles and a monomer for the production of polymers such as polyesters and polyurethanes. As an alternative to its chemical synthesis, it has been shown that glycerol can be converted to 1,3-propanediol by *Klebsiella, Citrobacter* and Clostridia strains. Due to its safety record *Clostridium butyricum* is the preferred strain for this process. In this work the effects of dilution rate and substrate feed concentration on continuous glycerol fermentation by *Clostridium butyricum* VPI 1718 were studied. Different values of dilution rate (D= 0.05-0.5 h^{-1}) were tested at a fixed substrate concentration (30 g/l). An improve in the volumetric productivity was achieved increasing the dilution rate up to 0.3 h^{-1}. At D values between 0.05 and 0.3 h^{-1} glycerol was exhausted from the culture medium. Significant concentrations of residual glycerol were observed at D values of 0.4 h^{-1} and 0.5 h^{-1}. Concentrations of glycerol in the feed medium of 60-70 g/l were tested. A higher 1,3-propanediol final level and a higher productivity (10.3 g/l/h) were achieved at D=0.3 h^{-1}; a switch in the acetate/butyrate ratio was also observed. Further improvement of the 1,3-propanediol productivity is being tested with a membrane bioreactor.