

Poster Papers

Growth and Cellulolytic Properties of Three Strains of Mesophilic Cellulolytic Bacteria (*Cellulomonas* sp., *Clostridium cellulolyticum*, New Isolate Strain R. T.)

B. ANDRIANARISOA, C. BAGNARA, E. FAURE, Z. DERMOUN, C. GAUDIN, AND J. P. BELAICH

Laboratoire de Chimie Bactérienne, CNRS, BP 71, 13277 Marseille Cedex 9, France

ABSTRACT

Parameters of growth on cellulose and soluble carbohydrates and production of CMCase were determined for three strains of mesophilic cellulolytic bacteria from various origins: a sugar cane field for *Cellulomonas* sp., decayed grass for *Clostridium cellulolyticum*, and sewage sludge for the new isolate (Gram +, non-spore-forming rod). These strains presented different physiological behaviors. *Cellulomonas* sp. was a facultative anaerobe, *C. cellulolyticum* was a strict anaerobe, and the new isolate was anaerobic-aerotolerant.

Kinetics of cellulose degradation clearly showed that cellulose structure was a limiting factor in cellulolysis by single cultures. Coculture of *Cellulomonas* and *Clostridium* was carried out under anerobic conditions and compared with culture of the respective pure strains. Although an inhibition of *Cellulomonas* growth was observed in coculture, an improved cellulolytic activity was measured: the highest digestion of cellulose was correlated with higher production of soluble sugars, with glucose a significant component.