

## Molybdenum reductase in *Enterobacter cloacae*

### ABSTRACT

Under anaerobic conditions in glucose-yeast extract medium with phosphate, *Enterobacter cloacae* strain 48 grew well and reduced Mo<sup>6+</sup>, to Mo<sup>5+</sup>. The activity of Mo<sup>6+</sup>-reductase was measured by the formation of molybdenum blue (complexation between Mo<sup>5+</sup> and phosphate ion). Models based on logistic and Luedeking-Piret equations were found adequate to describe the growth of *E. cloacae* and Mo<sup>6+</sup>-reductase production. Mo<sup>6+</sup>-reductase production was found to be a growth-associated process. Washed intact cells, membrane fraction (after disruption using a sonicator) and fluid supernatant (after cell disruption) were able to reduce Mo<sup>6+</sup>. However, Mo<sup>6+</sup>-reductase activity was much lower in the supernatant fluid. The (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>-precipitated Mo<sup>6+</sup>-reductase extract from fluid supernatant was assayed for its properties. The optimum pH and temperature for Mo<sup>6+</sup>-reductase activity were 8 and 30°C, respectively. The apparent Michaelis-Menten constant (K<sub>m</sub>) and a maximum velocity (V<sub>max</sub>) were 16.5mm and 0.0192 mol/ml.h, respectively.

**Keyword:** *Enterobacter cloacae*; Metal reduction; Molybdenum reductase