

# Production of Acid and Alkaline Phosphatases by *Myxococcus coralloides*

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**ABSTRACT.** Acid and alkaline phosphatase of *Myxococcus coralloides* were examined during vegetative growth in a liquid medium. Two extracellular phosphatases and two cell-bound phosphatases, acid and alkaline in both cases, were produced. The phosphatase production was unaltered by the presence of high concentrations of inorganic phosphate. Both enzymes were produced constitutively. These two hydrolases were released into the growth medium during the exponential growth phase (approximately 10 % of total activity). The production of these enzymes was modified by the presence of organic acids and metal ions in the medium.

Myxobacteria produce a number of extracellular compounds such as antibiotics, lytic enzymes and polysaccharides (Rosenberg and Varon 1984). They secrete a variety of enzymes that hydrolyze proteins, nucleic acids, fatty acid esters, polysaccharides and peptidoglycan (Shimkets 1984).

Phosphatases are enzymes that release phosphate from phosphate esters and their role is to supply phosphate under conditions of inorganic phosphate deprivation. These enzymes are widely found in bacteria. Although the phosphatases are repressed by orthophosphate in many bacteria (Shah and Blobel 1967; Cheng *et al.* 1970; Nesmeyanova *et al.* 1981; Von Tigerstrom 1984), they are constitutive in other cases (Mau-Hau and Blumenthal 1961; Cheng and Costerton 1973; Poirier and Holt 1983).

We have reported on acid and alkaline phosphatase (EC 3.1.3.2 and 3.1.3.1) activities during the life cycle of *Myxococcus coralloides* (González *et al.* 1987). This paper describes the phosphatase production by *M. coralloides* during its vegetative growth in liquid medium. The effect of inorganic phosphate and other substances on phosphatase production are also reported.

## MATERIAL AND METHODS

*Organism and culture conditions.* *Myxococcus coralloides* strain D obtained in our laboratory (Arias and Montoya 1978), was grown in CT liquid medium (containing potassium phosphate, 10 mmol/L) as described by Arias *et al.* (1983).

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