

FEMSLE 03721

Polyphosphate and orthophosphate content during the life cycle of *Myxococcus coralloides* D

Francisco González, José Muñoz, José M. Arias and Enrique Montoya

Departamento de Microbiología, Facultad de Ciencias, Universidad de Granada, Granada, Spain

Received 20 March 1989

Revision received 24 April 1989

Accepted 5 June 1989

Key words: Development; Germination; Myxobacteria; Orthophosphate; Polyphosphate; Sporulation

1. SUMMARY

Pool changes in the orthophosphate and acid soluble and insoluble polyphosphates of *Myxococcus coralloides* D were determined during the different stages of its life cycle. The acid-insoluble fraction is the major fraction. Polyphosphate was synthesised during vegetative growth in a liquid medium and during aggregation and fruiting body maturation. During the induction and germination of myxospores both types of polyphosphate were depleted, the acid-insoluble fraction during the myxospore induction and the acid-soluble during germination. The orthophosphate pool remained constant or increased during growth in a liquid medium, increased during growth on solid media and myxospore induction and decreased during myxospore germination.

2. INTRODUCTION

Inorganic polyphosphates are widely distributed among microorganisms. In various bacteria,

they act as reserve material for phosphorus and possibly as an *in vivo* energy reserve [1,2], the chain length ranging from 2 to more than 1000 phosphate residues. They are extractable from living cells as two principal fractions, the acid-soluble and acid-insoluble. The former consists of shortish free chains of phosphate monomers, whilst the latter exists as longer chains (up to 250 monomers) [3].

The deposition of polyphosphates has been studied in *Myxococcus xanthus* under a variety of nutritional conditions, being associated with glycogen inclusions, dispersed within the cytoplasm or embedded in the nucleoid [4]. Little is known, however, about the inorganic polyphosphate content during the different stages of multicellular development of these microorganisms.

We report here on the orthophosphate and inorganic polyphosphate content in *Myxococcus coralloides* D during the different stages of its life cycle.

3. MATERIAL AND METHODS

3.1. Microorganism and culture conditions

Myxococcus coralloides D is a strain in our laboratory. Liquid medium TT 0.25% and 0.75%

Correspondence to: J.M. Arias, Departamento de Microbiología, Facultad de Ciencias, Universidad de Granada, E-18071 Granada, Spain.