



GLUCOKINASES AND ANTHRACYCLINES SYNTHESIS IN *Streptomyces peucetius* var. *caesius*

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Key words: *Streptomyces*, glucokinase, secondary metabolites

Introduction. The genus *Streptomyces* produces a large variety of secondary metabolites. In 1976 the presence of two Glucokinases (Glc) were reported in a strain of *Streptomyces aureofaciens*, a chlortetracycline (CTC) producer. One utilizes ATP for phosphorylation and the other inorganic polyphosphate (pp-Glc). Both activities are present along the cell growth of this microorganism. ATP-Glc presents its greatest activity during the exponential growth phase, whereas the pp-Glc peaked at the stationary phase and showed a similar activity pattern with CTC production (1). Recently, it was found that an anthracycline producer, *Streptomyces peucetius* var. *caesius*, also contained both activities (2). Therefore, the aim of this work is to correlate the ATP-Glc and pp-Glc activities with anthracyclines production in *S. peucetius* var. *caesius*.

Methods. To assess the activity of Glc's, *S. peucetius* var. *caesius* was grown in a minimal medium (MM) supplemented with 100 mM glucose (2). Growth was determined by dry cell weight (mg/mL). ATP-Glc activity was measured according to (3). pp-Glc activity was determined by a variation of the methodology described by (2), and total anthracyclines production was measured as reported by (3).

Results. The activity of both enzymes was determined in *S. peucetius* var. *caesius*. As shown in Fig. 1, ATP-Glc presented its greatest activity at 48 h during the early stationary growth phase, and after that decreased to remain constant throughout the growth. On the other hand, pp-Glc (Fig. 2) exhibited a maximum activity at 72 h during the late stationary phase. After this time, pp-Glc activity decreased while anthracyclines production raises. Perhaps the different Glc activities observed relies on the availability of a specific phosphate group donor for each enzyme. A perspective of this work is to assay anthracyclines formation, ATP and polyphosphate concentrations throughout the growth curve.

Conclusions. The activity of pp-Glc seems to be necessary during the stationary growth phase in *S. peucetius* var. *caesius* to support anthracycline formation.

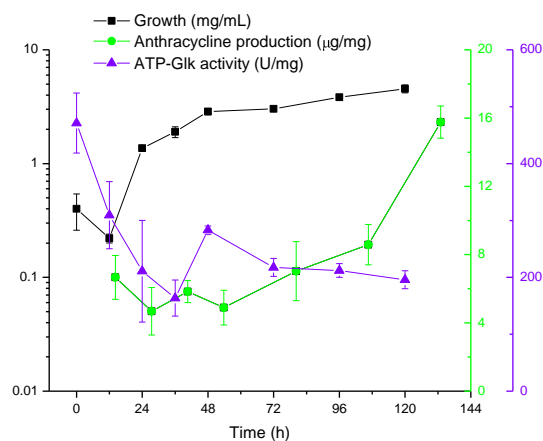


Fig. 1 Cellular growth, ATP-Glc activity and anthracyclines production by *S. peucetius* var. *caesius*.

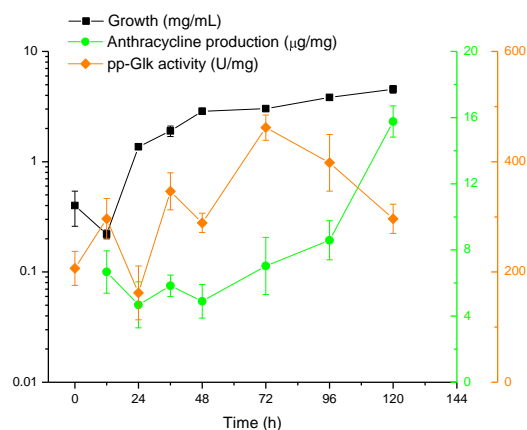


Fig. 2 Cellular growth, pp-Glc activity and anthracyclines production by *Streptomyces peucetius* var. *caesius*

Acknowledgements. D. Rocha is currently supported by a postgraduate fellowship from CONACYT, Mexico. This study is being supported by the PAPIIT, grant IN201413 from DGAPA, UNAM, Mexico

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