M. TUBERCULOSIS DORMANCY: PhoR AS A TRANSCRIPTIONAL ACTIVATOR/REPRESOR OF ITS *pst* OPERONS

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Tuberculosis remains a prominent cause of death in the world; so the identification and functional characterization of those bacterial genes products that are specifically required for infection is essential to understand the mechanisms by which *M. tuberculosis* causes disease.

Inorganic phosphate is an essential but limiting nutrient in the environment, therefore microorganisms should import that molecule through a phosphate-specific transporter (Pst). In *M. tuberculosis*, three putative *pst* operons have been identified, which probably constitutes the main components this microorganism uses for its growth and survival under different conditions during its infectious cycle.

The aim of this work was to determine the possible role of PhoR on the expression of the three *pst* operons of *M. tuberculosis* during its dormancy. In order to accomplish this objective, *M. tuberculosis* CDC 1551 and its mutant ΔphoR were used. Mycobacterial RNA was isolated from both, cultures grown in exponential phase and grown under *in vitro* dormancy conditions (Wayne model). cDNA was obtained through reverse transcription and the absolute quantity of transcripts for each gene (*pst*B, *pst*S1, *pst*C1, *pst*A2, MT0958, *pst*S2, *pst*S3, *pst*C2 y *pst*A1) was measured by real time PCR. A strong up regulation putatively caused by PhoR of all nine *pst* genes of *M. tuberculosis* was found during exponential phase; in some cases up to 10 times. During *in vitro* dormancy, PhoR may produce a switch on of four *pst* genes (*pst*A2, *pst*S3, *pst*C2 and *pst*A1), and an up regulation of three (*pst*C1, *pst*S2, MT958), up to 10 times. In contrast, this protein (PhoR) caused a down regulation of *pst*S1. In conclusion, PhoR can act as a transcriptional activator of the three *pst* operons of M. *tuberculosis* during its exponential phase of growth. This protein may have a dual function (repressor/activator) during the *in vitro* dormancy of *M. tuberculosis*.