

ABSTRACT

A *MYCOBACTERIUM SMEGMATIS* MC² 155 MUTANT DISRUPTED IN UNIVERSAL STRESS PROTEIN IS SENSITIVE TO A VARIETY OF STRESSES

This study examines a mutant in a universal stress protein in mycobacteria in its response to a wide variety of stresses. A *Mycobacterium smegmatis* mutant, VCusp2, disrupted in MSMEG_3940, is isolated from a library of 14 000 transposon mutants being screened for mutants that are sensitive to diamide, a thiol oxidizing agent. VCusp2 showed impaired growth in carbon or nitrogen deprived media and the mutant also demonstrated sensitivity to oxidants, alkylating agents, electron transport inhibitors/uncouplers, DNA damaging agent, and detergent compared to wild-type. The mutant displayed less tolerance to oxygen deprivation, nitrosative stress, acid and basic conditions, temperature stress, osmotic stress, and ultra-violet stress relative to the parent strain. Introduction of the operon, MSMEG_3939 and MSMEG_3940, or the upstream gene alone, MSMEG_3939, into VCusp2 restored wild-type phenotype in most of the stresses tested, indicating the role of universal stress proteins in conferring resistance to various stress conditions in mycobacteria.

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