

TRANSPORTER PROTEIN GENES FROM *ACIDITHIOBACILLUS THIOOXIDANS* FG01 ARE DIFFERENTIALLY REGULATED BY METAL SULFATES

Madureira, D.J.⁽¹⁾; Reis, F.C.⁽¹⁾; Ossa, D.M.H.^(1,2); Tada, S.F.S.⁽¹⁾; Ottoboni, L.M.M.⁽¹⁾

⁽¹⁾ CBMEG, UNICAMP, Campinas-SP, Brazil; ⁽²⁾ Departamento de Bioquímica e Tecnologia Química, IQ, UNESP-Araraquara-SP, Brazil; (E-mail: nina.madu@gmail.com)

Acidithiobacillus ferrooxidans and *Acidithiobacillus thiooxidans* are involved in bioleaching, a process that has been successfully used in copper recovery. To investigate the role of transporter protein genes when *Acidithiobacillus thiooxidans* FG01 was kept in the presence of covellite, chalcopyrite and pyrite, the expression of three genes, two that encode for ABC transporter proteins and one that encodes for an efflux transporter protein, was analyzed by Real Time PCR. For this, *A. thiooxidans* FG01 was cultivated in the presence of sulfur at 250 rpm, 30°C until an O.D. of 0.11 was reached. The cells were collected and then kept in contact with the metal sulfates during 24 hours. The 16S rRNA gene was used as a reference standard and transcripts isolated from sulfur grown cells were used as the calibration parameter. The primers used to amplify the target genes were based on the *A. ferrooxidans* ATCC 23270^T complete genome sequence made available by TIGR (www.tigr.org). The Real Time PCR quantification was performed twice, using RNA samples from independent cultures. In comparison to sulfur, the three genes analyzed were up-regulated in the presence of covellite and down-regulated in the presence of chalcopyrite and pyrite. Further analyses will correlate the obtained data with bacterial adherence capability and sulfate corrosion using scanning electron microscopy (SEM). **Financial support:** FAPESP, FAEP and CNPq