Biosorption of Zn\(^{2+}\) by living and lyophilized biomass of *Bacillus cereus* DAA54 and *Pseudomonas aeruginosa* DAA86

Magdy A Abo- Gharbia
Sohag University, Egypt

A total of 102 isolates were isolated from nine waste water samples were collected from different contaminated sites at Sohag governorate.-Egypt. Isolates were screened for zinc tolerance and the most tolerant two isolates were identified as *Bacillus cereus* DAA54 and *Pseudomonas aeruginosa* DAA86. MICs were 300 and 700 for *B. cereus* DAA54 and *P. aeruginosa* DAA86, respectively. Decrease in growth of both isolates (measured in terms of optical density) was observed upon increasing Zn\(^{2+}\) concentration at any given time interval compared controls. Protein profiles detected loss in addition to induction of low molecular weight proteins (96, 89, 63, 50, 44 and 11) KDa as responding to zinc shock. The optimum conditions for biosorption of zinc were investigated by using living and lyophilized biomass of both isolates. The optimum pH values for biosorption rate of zinc were 7.0 and 6.0 for *B. cereus* DAA54 and *P. aeruginosa* DAA86. The experimental adsorption data fitted Langmuir and Freundlich isotherm models. The maximum biosorption capacity (\(q_{\text{max}}\)) values of zinc by the living and lyophilized biomass of *B. cereus* DAA54 reached 166.67 and 181.81 mgg\(^{-1}\), respectively, and reached 144.93 and 153.85 mgg\(^{-1}\), respectively, for living and lyophilized biomass of *P. aeruginosa* DAA86. The biosorptive mechanism was confirmed by IR analysis. The high Zn\(^{2+}\) tolerance and biosorption capacity of *Bacillus cereus* DAA54 and *Pseudomonas aeruginosa* DAA86 make them candidate organisms for Zn\(^{2+}\) bioremoval from aqueous solutions.

Biography

Magdy A Abo- Gharbia is an Assistant professor in Faculty of Science, Sohag University, Egypt. He obtained his PhD in Microbiology, Dundee University, Scotland (1989). He has more than 5 publications in various reputed journals.

abu.gharbia@yahoo.com