



Biosorption of hexavalent chromium from aqueous solution using chemically modified *Spirulina platensis* algal biomass: an ecofriendly approach

Shubha M. Hegde, R.L. Babu¹, E. Vijayalakshmi[†], Rajeshwari H. Patil,
M. Naveen Kumar, K.M. Kiran Kumar, Rashmi Nagesh, K. Kavya, S. Chidananda Sharma*

Department of Microbiology and Biotechnology, Bangalore University, Jnanabharathi Campus, Bangalore 560056, Karnataka, India, Tel. +9880619756; email: shubha.madhava@gmail.com (S.M. Hegde), Tel. +9844912968; email: baburl.rl@gmail.com (R.L. Babu), Tel. +9482224923; email: rajiravi02@yahoo.co.in (R.H. Patil), Tel. +9743126898; email: naveenbio10@gmail.com (M. Naveen Kumar), Tel. +9844206329; email: kirankumar.krkm@gmail.com (K.M. Kiran Kumar), Tel. +9886847719; email: rashmi.nagesh1689@gmail.com (R. Nagesh), Tel. +9964555256; email: kavyajanu88@gmail.com (K. Kavya), Tel. +918022961461, +918022961462, +9902821286; emails: sharma@bub.ernet.in, sharma77030@yahoo.com (S.C. Sharma)

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ABSTRACT

Biosorption is the process of removing heavy metals and other toxic chemicals from environment using live or dead biomass. In this study, algal biomass of *Spirulina platensis* was chemically modified by acid/ECH treatment that altered the functional groups present on the cell membrane of biomass. By applying Langmuir isotherm model to the biosorption data, it was suggested that the efficiency of biosorption process of metal uptake by acid treatment of *S. platensis* was increased by more than 3-fold and maximum biosorption occurred at pH 3. The order of biosorption of Cr⁶⁺ was found to be HCl > HNO₃ > H₂SO₄ > raw algal biomass > ECH treated algal biomass by 15 h of contact time with q_{\max} of 5 mg g⁻¹. Fourier transform infrared analysis of modified algal biomass shows that lipids, carbohydrates, and proteins present in the membrane were probably involved in the biosorption process and acid-treated modified algal biomass could be used in the bioremediation of industrial effluents.

Keywords: Biosorption; *Spirulina platensis*; Chemical modification; Langmuir; FTIR

*Corresponding author.

¹Present address: Department of Bioinformatics and Biotechnology, Karnataka State Women's University, Jnanashakthi Campus (Torvi), Vijayapura 586108, Karnataka, India. Deceased.