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Adsorption of malachite green dye by microalgae *Scenedesmus* sp. MCC26: kinetics and mechanistic aspects

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The potential of green microalgae *Scenedesmus* sp. MCC26 isolated from textile and dyeing industrial site was investigated for removal of Malachite Green (MG) dye from aqueous solution. Batch studies were conducted to study the effect of pH, contact time and initial dye concentration. The adsorption kinetics were analyzed using pseudo first order and pseudo second order model and sorption data tend to fit very well in pseudo second order model for the entire sorption time. The Weber-Morris model revealed two step adsorption of MG with initial cell surface adsorption followed by intra-particle diffusion of dye molecules. Langmuir, Freundlich and Dubinin Radushkevich isotherm models have been used to evaluate the equilibrium data for dye adsorption. The maximum adsorption capacity of algae (125 mg/g) was observed at pH 6.0 within first 60 min of contact time at 30°C. Freundlich isotherm model with r2=0.986 represents the dye adsorption data successfully and shows the heterogeneous mode of adsorption. Algal biosorbent was characterized before and after dye adsorption using Fourier transform infrared spectroscopy (FTIR) in order to obtain the information on the nature of possible cell–dye molecule interactions.

Biography

Prakash Sarwa has completed her PhD in Environmental Biotechnology from Birla Institute of Technology & Science (BITS), Pilani, India. She is presently pursuing Post-doctoral studies at Department of Biological Sciences, BITS, Pilani. She has 10 years of research experience in the area of Environmental Biotechnology and Applied Phycology. She has published many research articles in renowned international journals and presented papers in international conferences. She was also actively involved in international workshops conducted by American Society of Microbiology on Bioremediation.

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