Michaelis–Menten kinetics for the simultaneous phytoremediation of Cr(VI) and phenol by determining the chlorophyll content using water hyacinth

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In this study, the aquatic macrophyte water hyacinth was grown in single and binary solution of Cr(VI) and phenol in an artificial photosynthesis chamber. The growth of the plant was determined by analyzing the chlorophyll content of the water hyacinth leaves using UV spectrophotometer. The chlorophyll content of leaves and root of the water hyacinth is found to be reduced due to the uptake of Cr(VI) and phenol. The specific growth rate of plant was calculated at various concentrations of Cr(VI) and phenol, respectively. A change in the surface morphology of the water hyacinth plant leaves has been observed after the uptake of toxic pollutant Cr(VI) and phenol. Various kinetic models such as Monod, Haldane and sum of kinetic model were applied to the experimental data for the estimation of kinetic model parameters.

Keywords: Chlorophyll; Monod; Phytoremediation; Water hyacinth

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