Reliable bioremediation of hexavalent chromium from wastewater using mango leaves as reductant in association with the neutral and anionic micellar aggregation as redox accelerators

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\textbf{ABSTRACT}

Chromate, the invisible danger of environment is found to be degrading both animal and plant kingdom with its carcinogenic oxidizing ability by contaminating ground water. To prevent uncontrolled Cr(VI) contamination, various chemical methods for reduction of hazardous Cr(VI) to less toxic Cr(III) have been established of which aqueous reduction, ion exchange, liquid–liquid extraction, and electrocoagulation are found to be effective. Bioremediation, a greener approach is always of greater interest. The aim of the present study is to utilize mango leaves for the reduction of hexavalent chromium and to accelerate the reduction process by the use of surfactants. A 168 h study reveals that in absence of surfactants 58% of the total chromium(VI) is reduced, whereas removal percentage increases upto 75% in the presence of neutral surfactant TX-100 and upto 79% in the presence of anionic surfactant SDS.

\textit{Keywords:} Hexavalent chromium; Nontoxic; Water extract; Mango leaves; Surfactant

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