Optimization and kinetics studies of Chromium degradation by *'Pseudomonas Putida'*

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ABSTRACT

Population explosion has initiated rapid industrialization and found to consequently increase the effluents and domestic waste water into the aquatic ecosystem, which has become a matter of concern over few decades. The pollutants of concern include lead, chromium, mercury, uranium, zinc gold, silver, copper, nickel, etc. Presence of these materials is toxic to both flora and fauna. Hence in the present study an attempt is made to remove the chromium from synthetic water by *pseudomonas putida.* Initial batch studies was carried to fix the three parameters like pH, carbon source and chromium source for the maximum and minimum degradation of chromium. The optimization studies using minitab software is carried out to obtain the optimum conditions. Experiments were conducted to know the kinetics of the chromium degradation at optimum conditions to get the maximum degradation. Design the continuous fermentor was done from the results obtained in kinetics studies at optimum values. The maximum degradation of 99.9% was obtained at optimum conditions of pH=7.8, Chromium concentration=40 ppm and Glucose concentration=0.133 g. The maximum growth rate of 0.97 hr^{-1} for chromium degradation with optimum pH of 7.8 and with initial chromium concentration of 40 ppm.