The Influence of pH and Halide Ions on Cefuroxime Electrochemical Degradation

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An optimal combination of pH and halide ion is considered an effective strategy for the removal of cefuroxime from wastewater accrued from hospitals and clinical laboratories. A conventional electrochemical system with two platinum electrodes was used, and the electrolyte solution had different compositions and different pH values. The study of redox processes at the electrode / electrolyte interface was performed on the basis of cyclic voltammetry (CV) and constant current electrolysis supported by absorbance spectra obtained from UV–Vis spectrophotometry. The experimental results showed that the efficiency of antibiotic elimination can be increased to 100% in electrochemical systems by choosing the optimal parameters. Using the optimal conditions of the relevant factors, including the pH and nature of the anion, the degradation processes of cefuroxime in electrochemical systems are also compared by kinetic approach.

Keywords: cefuroxime; electrode processes; spectroelectrochemistry; electrodegradation

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