

Original Paper

Removal of turbidity in raw water using chitosan in electrocoagulation process using aluminum electrodes

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Abstract

Background and Objective: Raw water is one of the main sources of water supply in some communities. Filtration of surface water resources is a challenging point in the rainy seasons due to the highly turbidity. This study was done to evaluate the removal of turbidity in raw water using chitosan in electrocoagulation process using aluminum electrodes.

Methods: In this the descriptive –analytical study, a Plexiglas electrocoagulation reactor in a lab scale to an approximate volume of 6 liter which was equipped with four aluminum electrodes having dimension of 200×20×2 mm was proposed. The effects of operating parameters including pH (5 to 9), applied voltage (10 to 30 V), the initial turbidity (100-600 NTU), initial chitosan concentration (0.5-2 mg/L) and contact time (5 to 30 min) were evaluated.

Results: Turbidity removal efficiency was over 100% (pH=7, applied voltage=30 V and initial turbidity concentration of 100NTU) in the application of electrocoagulation with chitosan but in the application of electrocoagulation without chitosan removed 87% of turbidity in the same condition.

Conclusion: Chitosan as coagulant aid in low amount can increase turbidity removal efficiency rather than application of electrocoagulation alone.

Keywords: Raw water, Water filtration, Turbidity, Electrocoagulation, Chitosan

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