

Abstract

The diploma thesis investigates the coagulation of nature waters with humic substances and peptides/proteins produced by *Microcystis aeruginosa* during water treatment process with aluminum coagulants. It was confirmed that the efficiency of coagulation mechanism of humic substances and peptides/proteins strongly depends on the pH value, because pH value is limited factor of a charge properties of peptides/proteins, humic substances and hydrolysis products of coagulants. The optimal pH range for the coagulation of humic substances was 5-6 and for cyanobacterial peptides/proteins 5-6.5. In both cases a charge neutralisation and an adsorption were dominant mechanism of coagulation. Optimal pH range for the coagulation of humic substances in the presence of cyanobacterial peptides/proteins was identical as well as optimal pH range of humic substances with absence of peptides/proteins (5-6) but the presence of peptides/proteins positively influenced particle coagulation of humic substances, because the optimal concentration of the coagulants decreased to more than half. An interaction between humic substances and peptides/proteins was demonstrated. A positive effect of coagulation was observed in the case of jar tests with absence of coagulants at a very low pH range (<4).

Keywords

Humic substances; AOM (Algal Organic Matter); Peptides/proteins; *Microcystis aeruginosa*; Coagulation; Water Treatment.