

Removal of zinc and lead ions by polymer-enhanced ultrafiltration using unmodified starch as novel binding polymer

Abstract

The removal of zinc and lead from aqueous dilute solutions by polymer-enhanced ultrafiltration process using unmodified starch as a new binding polymer was studied. Experiments were performed to determine the effects of transmembrane pressure, pH, concentration of metal ions on the retention and permeate flux. The performance of the proposed new binding polymer was compared to that of polyethyleneimine a conventional polymer frequently used in polymer-enhanced ultrafiltration. The retention of zinc and lead ions reached 96 and 66 %, respectively, using 0.05 % unmodified starch at pH 7. Overall unmodified starch showed better retention for zinc ions than polyethyleneimine, whereas polyethyleneimine retention for lead ions was higher. Solution pH was found to have little effect on flux.

Keywords

Complexing agents; Metals; Polyethyleneimine; Separation; Water soluble