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Abstract: This paper reports the results of phosphate removal by micellar enhanced ultrafiltration (MEUF) using cellulose membranes. Usability of cationic surfactants for removal of phosphates from aqueous solutions was assessed. Cellulose membranes (Microdyn Nadir) of various cut-off values (5, 10 and 30 kDa) and two cationic surfactants (hexadecyltrimethylammonium bromide, CTAB and hexadecylpyridinium chloride, CPC) were used in the experiments. The surfactant concentration was 2, 3 and 6 CMC (critical micelle concentration). Cellulose membrane with a cut-off value of 10 kDa exhibited the best separation properties – phosphate removal efficacy varied from 40 to 75% and from 38 to 68% for solutions containing CPC and CTAB, respectively. It was observed that increase in surfactant concentration resulted in the improvement in phosphate removal efficacy and in the concurrent worsening of membrane permeability.

Keywords: Water treatment, cellulose membrane, phosphates, hexadecyltrimethylammonium bromide, hexadecylpyridinium chloride.