



Effect of backwash temperature on hollow fiber ultrafiltration membranes fouled by sodium alginate

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ABSTRACT

This study focuses on the effect of backwash temperatures (25, 40, and 55°C) on hollow fiber ultrafiltration membranes fouled by sodium alginate (SA). The results indicate that a higher backwash temperature could achieve a significant mitigation of total backwash resistance and a cleaning rate promotion. In the following cycle, the initial total fouling resistance was decreased with the temperature increase, while there was an undesirable increase on the fouling rate due to a higher SA concentration in the membrane pool. Although the membrane fouling resistance was more reversible, backwash at 55°C had a negative impact on the SA removal, because the functional gel layer was washed out. Moreover, all the beneficial effects from 25 to 40°C were more noticeable than those from 40 to 55°C. Overall, backwash at 40°C was relatively a better choice in this study.

Keywords: Ultrafiltration; Sodium alginate; Backwash temperature; Hollow fiber membrane; Total backwash resistance

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