Title: Assessment of saccharide fractionation by ultrafiltration and nanofiltration

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Abstract: This paper addresses the investigation of the fractionation of saccharide mixtures and saccharide mixtures with calcium using ultrafiltration (UF) and nanofiltration (NF). A set of cellulose acetate membranes covered a wide range of molecular weight cut-off (MWCO) ranging from 250 to 46,000 Da and the total feed concentration of saccharides mixtures varied from 1550 to 4700 ppm with the ratio of the two saccharides-solutes (glucose to raffinose) being kept constant at the value of 1.8. The evolution pattern of the saccharide concentration ratio in the UF/NF permeate streams displayed a dependence on the membrane MWCO, on the total sugar concentration and on the presence of calcium ions. For the highest total sugar content, the membranes with MWCO from 2000 to 7000 Da showed saccharide fractionation capability that was enhanced in the presence of calcium. The Steric Pore Flow Model was used to predict individual solute permeation behaviours and to assess the deviations to steric hindered transport of the solutes in multi-component saccharide solutions. (C) 2008 Elsevier B.V. All rights reserved.

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