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Abstract

Fermentation of optically pure D-lactic acid was carried out using cassava starch as the main substrate. For downstream processing, membrane-based processes consisted of microfiltration, nanofiltration, and pervaporation-assisted esterification were successfully employed for the production of high purity D-lactic acid. The spiral wound microfiltration and nanofiltration were performed as high potential pretreatment steps for removal of bacterial cell, protein, and color compounds. The pervaporation dehydration of esterification reaction between D-lactic acid and ethanol was investigated in order to enhance the conversion to ethyl lactate. Up to 95% of water was separated out of the system resulting in a lactic acid conversion yield of 0.93. Mathematical modeling of each membrane system was