

Selective monosaccharides extraction mediated by methyl cholate in a supported liquid membrane

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ABSTRACT

The separation of aqueous mixtures of monosaccharides has been carried out with a supported liquid membrane (SLM) containing methyl cholate as carrier in cyclohexane. Special attention has been paid to optimizing conditions for effective separation, while retaining large permeabilities. The SLM selectivity slightly increased with increasing substitution of the solvent and decreasing pore size, but at the cost of unacceptable decrease of permeability. The selectivity of the SLM was determined from separation experiments of binary mixtures. The permeabilities are smaller in the mixtures than for the individual components, due to competition between the two monosaccharides of the mixture to form a complex with the limited amount of carrier. This competition depends on the difference of the stability constants between the two carrier–sugar complexes (CS). The SLM allowed some interesting separations ($\alpha > 1.25$). The separation of the monosaccharides depends on three parameters: functional groups, chain length and configuration.

Keywords: Separation; Monosaccharides; Supported liquid membrane; Facilitated transport; Methyl cholate

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