

Optical resolution with membranes derived from marine polymers

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ABSTRACT

Novel polyion-lipid complexes were prepared from quaterinized chitosan (QCh), which was a derivative of marine (natural) polymer, and three types of anionic amphiphile, such as sodium 1-dodecanesulfate (C12SNa), sodium 1-tetradecanesulfate (C14SNa), and sodium 1-hexadecanesulfate (C16SNa). Those complexes gave durable self-standing membranes. The QCh–lipid complex membranes prepared in the present study showed chiral separation ability; in other words, they selectively transported L-Lys from racemic mixture of Lys adopting a concentration gradient as a driving force for membrane transport. Permselectivity of QCh–C12S membrane toward L-Lys was determined to be 3.31 under the concentration difference of $1.0 \times 10^{-3} \text{ mol dm}^{-3}$. From transport experiments and adsorption studies, it was revealed that the permselectivity was dominantly determined by diffusivity selectivity. It is expected that the present study would open a door to novel materials.

Keywords: Chiral separation; Chitosan; Green polymers; Membranes; Optical resolution; Permselectivity

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