A flat-sheet supported liquid membrane based on Aliquat® 336 as carrier for the removal of salicylic acid from aqueous solution

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ABSTRACT

This study deals with the extraction of salicylic acid (SA) from aqueous solutions through a flat-sheet supported liquid membrane system. Tricaprylmethylammonium chloride (Aliquat® 336) diluted in 2-octanol is used as membrane organic phase. In a previous work, 1-hexyl-3-methylimidazolium hexafluorophosphate ([C₆mim][PF₆]) or ethylammonium nitrate (EAN) is used instead of the above mixture. Transport efficiency around 50% and 9 days stability has been obtained. In this work, the use of 10% (v/v) Aliquat® 336 in 2-octanol improves the transport efficiency of the system (around 90%). The important operational variables affecting the facilitated transport of SA are concentration of Aliquat® 336, membrane viscosity, feed phase pH, stripping agent concentration, initial SA concentration, polymeric support type, and membrane stability. Regardless of its higher SA transport efficiency, the SLM based on the mixture Aliquat® 336/2-octanol exhibits shorter long-term stability (time dependent-negative tendency) as compared to the use of [C₆mim][PF₆] or EAN.

Keywords: Supported liquid membrane; Tricaprylmethylammonium chloride (Aliquat® 336) ionic liquid; Salicylic acid; Facilitated transport; Supported liquid membrane stability

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