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Extraction of Glycyrrhizin from Licorice (Glycyrrhiza Glabra L.) by Bulk Liquid Membrane

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ABSTRACT

In this work, the extraction of glycyrrhizin from Licorice using bulk liquid membrane technique was developed and optimized. The effect of various parameters such as pH of stripping and donor solutions, temperature, stirring speed and kinetic parameters were investigated. Moreover, to study the impact of the polarity of membrane solvent, two types of extraction solvents were used as a membrane solvent: n-Hexane was used as a non-polar solvent and 1-Hexanol was as a polar solvent.

The optimum extraction condition was found (95.53%) using 1-Hexanol, rotating speed was 400 rpm, and pH of the acceptor and donor solutions were 8 and 5.5, respectively. The reaction kinetic constants (K_1 and K_2) for the transport of glycyrrhizin from the donor phase to BLM phase then to acceptor phase were evaluated. In addition, the accumulation of glycyrrhizin in bulk liquid membrane phase and rate controlling step under different experimental conditions were also discussed. The results showed that the proposed liquid membrane was effectively applied for glycyrrhizin extraction from the aqueous phase.

Keywords: Glycyrrhizin, Licorice, Kinetic procedure, Liquid membrane, and Extraction.