Electrochemical Behavior of the Facilitated Transfer of K^+ by Dibenzo-18-Crown-6 at the water|1,2-dichloroethane Interface in the Presence of Bisphenol A

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The present work examines the influence of bisphenol A on the facilitated transfer of K^+ by dibenzo-18-crown-6 across the water|1,2-dichloroethane interface. Electrochemical studies are conducted by Cyclic Voltammetry (CV) and Electrochemical Impedance Spectroscopy (EIS). The results indicate that bisphenol A does not partition into the aqueous phase, but remains at the interface, where it inhibits the phase-transfer of K^+ . The transfer current of this cation decreases as the concentration of bisphenol A in the organic phase increases. CV and EIS studies indicate that bisphenol A absorbs on the organic side of the interface, where it decreases the active area and blocks K^+ transport. The results of this work can serve as a model to understand interfacial ion transfer in biological membranes and the potential behavior of BPA in living systems.

Keywords: ITIES, AC impedance, DB18C6, Bisphenol A, Ion Transfer

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