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Production of L-lysine from L-lysine monohydrochloride by bipolar membrane electrodialysis

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ABSTRACT

Bipolar membrane electrodialysis consisting of one bipolar membrane, one anion-exchange membrane and one cation-exchange membrane was performed to achieve the production of L-lysine from L-lysine (L-Lys) monohydrochloride. Several experimental parameters including the operation voltage, the initial L-Lys·HCl concentration and operation temperature were compared and discussed. The Cl^- removal ratio, the electric conductivity, the pH in various compartments, the current efficiency (CE) and the energy consumption (EC) were presented and analyzed respectively. When the initial concentration of L-Lys·HCl is 0.6 mol/L and the constant voltage is 40 V, the removal ratio of Cl^- reached 86.6%, the CE 24% and the EC 28.2 kW h/kg. Elevating the operation temperature can promote the electrodialysis process slightly.

Keywords: Bipolar membrane; Electrodialysis; L-Lysine; L-Lysine monohydrochloride

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