

Surface Modification of the Biomass of *Corynebacterium glutamicum* to Increase Carboxyl Binding Sites for Basic Dye Molecules

모주앤, 윤영상*

전북대학교

(ysyun@chonbuk.ac.kr*)

The objective of this study is to develop a surface-modified biosorbent with enhanced sorption capacity for cationic dye Basic Blue 3 (BB 3). The biomass of *Corynebacterium glutamicum* was modified with succinic anhydride (SA). The optimal modification conditions were determined at pH 11, 25°C and 2 h of reaction time. The enhancement in BB 3 biosorption increased to 260 % after modified. Amino groups in the biomass surface were replaced by negatively charged groups and therefore the site available for cation binding generally increased. The presence of carboxyl groups were confirmed by X-ray photon spectroscopy (XPS) and Fourier transform infrared (FTIR) analysis, and the content of the carboxyl groups on the biomass surface was determined through potentiometric titration. Comparing with protonated biomass, the data revealed that SA modification produced a large amount of surface functional groups, enhancing the BB 3 binding capacity of the biomass. Therefore, the developed method for amplifying the carboxyl sites in the biomass can be a useful modification tool to make a high-performance biosorbent.