Enhanced Biosorption of Reactive Red 4 by Amplifying Binding Site in the Biomass of *Corynebacterium glutamicum*

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Adsorption techniques have been widely used to remove certain classes of pollutants from waters, especially those that are not easily biodegraded. Dyes represent one of the problematic pollutants. Biosorption has been demonstrated to be useful alternative to conventional treatment system for the removal of dyes even from dilute aqueous solutions. This study dealt with activation methods of waste microbial biomass to be used as a renewable and low cost biosorbent. The objective of this work is to develop a surface-activated biosorbent with enhanced sorption capacity and binding affinity. The FTIR and potentiometric titration studies revealed that carboxyl, phosphate and amine groups played a role in binding of dye molecules. The binding sites for reactive dye (RR4) were identified to be primary amine groups present in the biomass. In this work, based on the biosorption mechanism, the amine group was increased by chemical modification. The resulting activated biosorbent was evaluated to have superior sorption performance to the original raw biomass.