

Biosorptive removal of Reactive Orange 16 with amino acid fermentation process residue

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Dye is the useful material for coloring textures. Since it is not easy to be biodegraded in aquatic environments, effective treatment of waste dyestuff has been considered to be of great importance. Chemical treatment of dyes induces the secondary contamination. Although ozone oxidation or membrane process is effective to remove the reactive dye, the initial investment and operational expense are considerable.

In this study, the amino acid fermentation process residue, *Corynebacterium glutamicum* biomass, was used as a biosorbent to remove Reactive Orange 16. The dye was effectively removed at solution pH 1 - 2. The initial slope of isotherm curve was steep, indicating that the biomass affinity for the dye molecules is high. The uptake of dye molecules was 95 mg dye/g biomass at pH 2 where the final equilibrium concentration was 50 mg/L. Therefore, the biomass of *C. glutamicum* was likely to have potential as a dye biosorbent for the viewpoint of dye affinity and sorption capacity. Furthermore, the fermentation byproduct is much cheaper than commercial adsorbents such as activated carbons and ion exchange resins.