

Biosorption of Reactive Black 5 using fermentation waste biomass *Corynebacterium glutamicum*

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Dyes are used extensively by industries including textile, paper and leather. The effluents emanating from these industries often are highly colored and can be extremely undesirable. Therefore, methods should be implemented for effective pollution abatement of dyed effluents. Fermentation industries generate huge amounts of waste biomass of microbial origin their potential use remains largely untapped. Considering these aspects, this study aimed to investigate the biosorption potential of fermentation waste (*Corynebacterium glutamicum*) biomass using a model reactive dye, reactive black 5 (RB5). Initially, the biomass was pretreated using different chemical agents to improve dye biosorption capacity. Among these, 0.1 M HNO₃ pretreated biomass exhibited highest RB5 uptake of 195 mg/g at pH 1. Sorption isotherms at different pH conditions were described using Langmuir, Freundlich, Redlich–Peterson and Sips models. Sorption kinetics was described using pseudo first and second order models. The influence of temperature was studied in detail and thermodynamic parameters (ΔG , ΔH and ΔS) were evaluated.