

TITLE: ADSORPTION OF METHYLENE BLUE DYE BY TREATED BIOMASS OF *Cladosporium sp.*

AUTHORS: MATOS, G.C.O.; DINIZ, G.F.D.; CURY, J.C.

INSTITUTION: UNIVERSIDADE FEDERAL DE SÃO JOÃO DEL REI, *CAMPUS DE SETE LAGOAS* (RODOVIA MG 424, KM 47 CEP: 35701-970 – SETE LAGOAS – MG, BRASIL)

ABSTRACT:

The adsorption of dyes by biological materials has been studied in order to reduce costs in the treatment of textile effluents. The microbial biomass has presented good results of adsorption capacity. Several studies have shown that physical and chemical treatments of biomass can increase the adsorption capacity of the dyes. This work had as objective to evaluate the effect of biomass treatments on the adsorption efficiency of the methylene blue dye. The adsorbent biomass was produced from the growth of a *Cladosporium sp.* fungus in Sabouraud Dextrose Broth culture medium and subsequent different treatments, being: autoclaving for 15 min; Immersion in 0.2 mol L⁻¹ HCl solution during 1 hour; immersion in 0.1 mol L⁻¹ NaOH solution during 1 hour. Untreated biomass was considered as the control. After the treatment, the biomass was dried and macerated. For the adsorption test, four concentrations of the methylene blue dye (10, 20, 30 and 40ppm) and 0.1 g of the biomass were used. The dye solution and biomass were kept in contact with constant agitation (120rpm) at 28°C during 24h. Subsequently, the solutions were centrifuged for 30min at 4000rpm and the supernatant was used for absorbance determination. The experiment was carried out in triplicate. The results were submitted to analysis of variance and the means were compared by the Tukey test (p<0.05). The percentage of decrease in absorbance was significantly higher when NaOH-treated biomass was added in methylene blue solutions at concentrations of 10, 30 and 40ppm, being 95.9%, 83.8% and 82.5% respectively. At the concentration of 20ppm there was no significant difference. It is concluded that the treatment of the biomass of the used fungus with NaOH increased its ability to remove the methylene blue dye from solution.

Keywords: biosorbent, methylene blue, fungi, *Cladosporium sp.*

Development Agency: UFSJ; FAPEMIG