

**TITLE:** ADSORPTION CAPACITY OF DIFFERENT TEXTILE DYES BY FRESH BIOMASS OF BREWER'S YEAST

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**ABSTRACT:**

Among the industrial wastes that may be toxic to the environment and / or produce cancer and mutations, textile dyes are the most difficult to treat because they exhibit a stable chemical structure that is difficult to break down. Bioadhesives based on fungal biomass have been well studied and appear for adsorption of organic molecules. The second residue most produced during the production of beer is the yeast biomass that is left over from the fermentation process of brewer's wort, the so-called yeast. The objective of this study was to evaluate the adsorption capacity of fresh dye from draft beer production. Four dyes were tested: Red Novacron; Red Terasil; Blue Palanil; Rubi Palanil. An experiment was carried out in triplicate consisting of the addition of 0.25 g of fresh and washed yeast biomass (0.04 g dry weight) to 15 ml polypropylene tubes containing solutions of the dyes at the concentrations of 10, 20, 30 and 40ppm. The tubes are kept under agitation of 200rpm horizontally during 24h. The tubes were centrifuged at 4000 rpm for 10 minutes for sedimentation of the biomass. A spectrophotometer absorption determination was made using the maximum absorbing wavelength for each dye. The brewer's yeast biomass showed good ability to remove the dyes from the solution through adsorption. The rates of decreasing of absorption of the solutions treated with the biomass varied in function of the dye and the dye concentration, being, as respective concentrations of 10, 20, 30 and 40 ppm, as follows: 78.3±2.3%, 75.3±3.6%, 71.1±1.8% and 68.6±2.8% for the Red Novacron dye; 81.7±8.7%, 92.1±0.7%, 92.3±3.8% and 79.2±2.7% for Red Terasil dye; 83.2±14.1%, 53.0±15.3%, 54.2±10.6% and 41.2±4.7% for the Blue Palanil dye; 71.0±13.3%, 84.5±10.7%, 75.7±8.8% and 70.5±5.1% for Rubi Palanil dye.

**Keywords:** brewer's yeast, adsorption, textile dye

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