

Luffa cylindrica as Alternative for Treatment of Waste in the Classroom

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Abstract : Methylene blue (MB) and malachite green (MG) are substances commonly used in classrooms for academic purposes. Nevertheless, in most cases, there is no adequate disposal of this type of waste, their presence in the environment affects ecosystems due to the presence of color and the reduction of photosynthetic processes. In this work, we evaluated properties of fibers of *Luffa cylindrica* in removal from dyes of aqueous solutions through an adsorption process. The point of zero charge, acid and basic sites was also investigated. The best conditions of the adsorption process were determined under a discontinuous system, evaluating an interval of the variables 2 3 : pH value, particle size of the adsorbent and contact time. The temperature (18°C), agitation (220 rpm) and adsorbent dosage (10g/L) were constant. Measurements were made using UV-Visible spectrophotometry. The point of zero charge for *Luffa cylindrica* was 4,3. The number of acidic and basic sites was 2.441 meq/g and 1,009 meq/g respectively. These indicate a prevalence of acid groups. The maximum dye sorption was found to be at a pH of 5,5 (97,1 % for MB) and 5,0 (97,7% for MG) and particle size of the adsorbent 850 µm. The equilibrium uptake was attained within 60 min. With this study, it has been shown that *Luffa cylindrica* can be used as efficient adsorbent for the removal of methylene blue, and malachite green from aqueous solution in classrooms.

Keywords : adsorption, dye removal, low-cost adsorbents, *Luffa cylindrical*

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