Treatability of Methylene Blue Solution by Adsorption Process Using *Neobalanocarpus hepmii* and *Capsicum annuum*

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ABSTRACT

The effectiveness of adsorbent agent from agricultural wastes and biomass to remove dye from aqueous solution was investigated. In this study, solution of methylene blue (MB) and two adsorbents, bark of cengal tree (*Neobalanocarpus hepmii*) and seed of red chili (*Capsicum annuum*), were tested. Experiments were performed with testing MB solution at 3-h interval and also testing with different quantities of adsorbent. In addition, the further study on characterization of adsorbent by Field Emission Scanning Electron Microscopy (FESEM) and Fourier Transform Infrared Spectroscopy (FTIR) was conducted in order to elucidate the properties and surface structure of the adsorbents. Analysis from UV-Vis spectroscopy showed that both adsorbents remove MB dye effectively and according to FESEM analysis due to the structure of the adsorbent were perforated and consist of polymer components. On the other hand, in FTIR perspective, the adsorption was successful because of the presence of carboxyl and carbonyl groups from both adsorbent that helps enhanced the process of adsorption.

KEYWORDS: Methylene blue; Dye removal; Adsorption; Agricultural waste

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