


Abstract

# Use of Biomass Residues in MB Removal from the Aqueous Phase<sup>†</sup>

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Each day, abundant agricultural and agro-industrial wastes are generated to fulfil the growing population's increasing demand for food. Preliminary results concerning the valorization of biomass waste through its use for water treatment are presented in this work. The efficacy of biomass residues, such as coconut shells and cork residues, was tested in the removal of methylene blue (MB) from the aqueous phase. The study of MB adsorption was conducted using a batch-based approach, and the effects of pH, the initial concentration of MB, adsorbent granulometry, contact time and temperature were evaluated. The MB adsorption was more effective at a pH 7. Temperature seems to have no significant effect on MB adsorption on coconut shells but the rising temperature promotes an increase in the amount of MB adsorbed on cork residues.

Adsorption isotherms were obtained at 298 K, after a contact time of 24 h. The adsorption performance of the natural adsorbents was significantly high in coconut shells, with a granulometry lower than 0.63 mm, revealing a maximum removal capacity of 143.7 mg of MB per gram. With cork, using the same experimental conditions, the maximum amount of MB adsorbed reaches 102 mg of MB per gram, but with cork, the granulometry seems less relevant. These results are very similar to those obtained with Imbondeiro, which were considered to be extremely promising [1].

The possibility of using agricultural wastes as adsorbents in water treatment is becoming of great importance. These wastes can successfully replace adsorbents, such as activated carbons, which are currently used in water treatment but have a relatively high cost.

**Supplementary Materials:** The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/proceedings2024105087/s1>. Conference presentation.

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## Reference

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