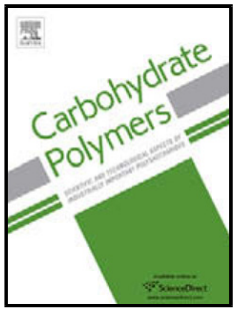

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Chitosan-Edible Oil Based Materials as Upgraded Adsorbents for Textile Dyes

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Highlights

- A method to prepare conjugated chitosan-oil materials is presented and discussed.
- The novel materials were properly characterized and applied as adsorbents
- Modifications improved acidic conditions stability and extent of dyes removal.

Abstract

Biopolymer chitosan is a low cost, abundant, environmentally friendly, very selective and efficient anionic dyes adsorbent, being a promising material for large-scale removal of dyes from wastewater. However, raw chitosan (CS) is an ineffective cationic dyes adsorbent and its performance is pH sensitive, thus, CS modifications that address these issues need to be developed. Here, we report the preparation and characterization of two new CS modifications using edible oils (soybean oil or babassu oil), and their adsorption performance for two dyes, one anionic (remazol red, RR) and one cationic (methylene blue, MB). Both modifications extended the pH range of RR adsorption. The babassu oil modification increased adsorption capacity of the cationic dye MB, whereas the soybean oil modification increased that of RR. Such improvements demonstrate the potential of these two new CS modifications as adsorbent candidates for controlling dyes pollution in effluents.