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Studies on Colour Removal from Textile Industry Effluent Wastewaters by Activated Carbon Made from Date (*Phoenix dactilyfera*) Seeds

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Abstract: Textile industries generate huge quantities of coloured effluent wastewaters, which if drained into atmosphere, would cause environmental problems. Hence, efforts are made to remove the colured material from the effluent waters. One of the most popular methods to remove the colour is by adsorption of the dye on some adsorbents. Different adsorbents are in vogue. Activated carbon is indeed the best adsorbent but for its cost. Hence, a lot of work was reported on the preparation of activated carbon from various agricultural waste materials. One such popular method is to make activated carbon from date (*Phoenix dactilyfera*) seeds by activation and carbonization of the seeds which are later ground to a fine powder. This paper discusses the efficacy of date seed-based activated carbon as an adsorbent to remove the colours from textile industry effluent wastewater, and the effect of various process parameters such as contact time, pH, adsorbent dose, and stirring speed. Studies were made with 300 ml coloured wastewater with different initial concentrations of dye (2.25, 4.5 and 6.75 mg/ml). Optimum conditions at room temperature were found to be stirring speed : 100 rpm, pH : 6.0, initial dye concentration: 6.75 mg/ml, and adsorbent dosage : 0.9 g in 300 ml of effluent water. Maximum possible colour removal was 49.3% for a contact time of 200 min.

Keywords: *Textile, effluent, treatment, adsorption, activated carbon, date seed, decolourization.*

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