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Adsorptive Removal of Colour from Aqueous Solution of Disazo Dye by Using Organic Adsorbents

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Abstract : Aqueous C.I. Direct Blue 77 dye was decolourized by adsorption onto Gigantia Leaves (GL), Curcuma Longa Leaves (CLL), Morienga Oleifera (MO) and Citrus Sinensis (CS). To understand the potentiality of organic adsorbents, experiments were conducted to determine equilibrium time, optimum dose of adsorbent, optimum pH, adsorption isotherms, kinetic studies, desorption studies and interruption studies. The corresponding results showed that excellent colour removal of Direct Blue 77 can be achieved with adsorbents at optimum pH of 4. The maximum colour of Gigantia Leaves, Curcuma Longa Leaves, Morienga Oleifera and Citrus Sinensis was 81%, 79%, 70% and 59% respectively. The isothermal equilibrium sorption data was well fitted into the Freundlich Isotherm. Kinetic studies which implies that chemisorption is the rate limiting step. Desorption studies, it states that physisorption plays a significant role in the colour removal of dyes. Pore diffusion seems to be the rate controlling in the sorption process as indicated by interruption studies.

Keywords: Adsorption, C.I. Direct Blue 77, Gigantia Leaves, Curcuma Longa Leaves, Moringa Oleifera, Citrus Sinensis.

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