



Title: Removal of Dye from Textile Wastewater Using Plant Oils Under Different pH and Temperature Conditions

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Abstract: The effectiveness of five plant oils (cottonseed, olive, canola sunflower and used cooking oil) for the removal of dye from textile wastewater was evaluated. The study revealed that the dye removal efficiency increased as the temperature was increased. Under low pH, both the oil and dye split into two components each. Neither one of the oil components joined with either one of the dye components. However, the observed reduction in the absorbance under acidic conditions can be attributed to the dye components losing some of their original color or producing different colors that were not effectively measured at 475 nm. When the dye solution was shaken with the oil under alkaline conditions, it formed a colloidal solution containing the oil plus the dye, resulting in a significant dye removal from solution. The results also showed that the optimum conditions for the dye removal for various oils were at a pH of 13 and a temperature of 55 °C, except for canola oil that produced the highest dye removal efficiency at pH of 7. The used cooking oil achieved the highest dye removal efficiency (95.45%) followed by olive oil (87.00%). The other oils (cottonseed, canola and sunflower achieved dye removal efficiencies below 58% and are, therefore, not recommended for dye removal.