

Organic Dyes Degradation Using Waste Material

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ABSTRACT

The current investigation examines whether the coagulation-flocculation method, which uses *Moringa oleifera* seeds as an environmentally benign natural coagulant and antibacterial agent, is suitable for the purpose of clearing murky water. In cases when the water is more murky, its efficiency can reach 99.99%. However, the removal effectiveness is significantly lower for low dirty water. The majority industrial wastewaters have high turbidity levels, whereas drinking water sources have lower to medium turbidity levels. To improve for removal effectiveness in low turbid water, the literature that was accessible suggested extracting the vital component of *Moringa oleifera* seed dust using procedures such as oil purification, salt purification, micro filtering, and ultra purification. Because the active components are isolated, the operation of the crude preparation by salt purification of *Moringa oleifera* seed after oil purification increases the removal efficiency. Greater turbidity removal effectiveness of up to 99% for low turbid water is achieved when the crude extract of MO treated water, after coagulation and flocculation, is immediately passed through fast sand filters without sedimentation. The requisite sedimentation and flotation procedures will lessen filter clogging in the event of medium- or high-turbid water. This method is useful for quickly, cheaply, and easily purifying turbid water that has been polluted. This method may be efficiently used by inexperienced individuals as well.

Keywords: Plant Waste, Dyes, Adsorption, Removal.

INTRODUCTION

Originate in India, *Moringa oleifera* is a type of perennial tropical arbor that is commonly planted in Asia, Africa and Asia tropical and subtropical region of Central America. It is member of Moringaceae family which found in Because almost every part of plant including the leaf, root and seed used as a food. Its numerous active ingredients also give range of pharmaceutical properties such as antioxidant, anti-inflammatory, anticancer and antibacterial properties (Mabalane *et al.*, 2024).

Dye is a chemical that gives textile, paper, leather and other materials their color so that washing, heat, light and other elements that the item is likely to come into contact with won't easily change the color (Iqbal *et al.*, 2025). In contrast to dye pigment are finely powdered solid that are mixed with other substances or dispersed in liquid. Pigments can be dye they are not soluble in media (Amiri and Maryam, *et al.*, 2024).

MATERIAL AND METHODOLOGY

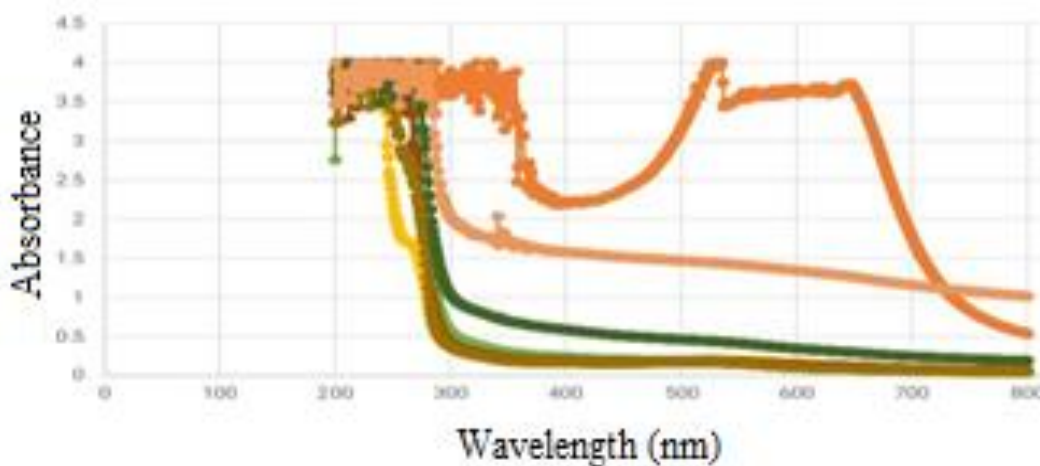
The dye waste water treats with the *Moringa oleifera* to get the purified water. Washed the plant root and dry convert into powder form. The stock solution of the dye was prepared by final concentration of 1×10^{-3} . Now the work on the different parameter. Weight the sample mixed into the solution take place into sonicator for 30 minutes the find out the spectra. Maintain the pH so add sometimes HCl (for acidic pH) and sometimes NaOH (for basic pH). Maintain the temperature so something provides heat and sometimes add ice.

RESULT AND DISCUSSION

In these graph we discussed on wavelength versus different weight we fixed the volume of dye waste water and varies the weight of sample the graph show at different peak. At 0.1 absorbance is high so peak height is very sharp appeared. At 0.25 g the given middle of peak Time to time increase the amount of sample so the

peak height is move to left to right. At the end high amount of sample 0.21 the give the down peak then means absorbance is very low and concentration dye waste water is very low.

In this graph different masses or fixed volume, the graph show result multiple peak. At 0.01 give the sharp height peak due the increase the absorbance or concentration. At 0.25 g of sample the give the middle peak move left to right. Time to time give the down peak increase the amount the sample so the absorbance is decreased that peak height is move to down so the concentration of waste water is very low.



REFERENCES

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