

Waste Water Treatment by *Moringa oleifera* Seed Powder in Historical Jalmahal Lake Located in Semi-Arid Monsoon Zone of India

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Abstract : The rapid urbanization in India was not accompanied by the establishment of waste water treatment facility at similar and same pace. The inland fresh water ecosystem is increasingly subjected to great stress from various human activities. Jalmahal Lake is located in Jaipur city of Rajasthan state; the lake was constructed about 400 years ago and surrounded by hills. The lake was approximately 139 hectare in full spread and has catchment area of 23.5 sq. kilometer. Out of the total catchment area approximate 40% falls inside dense urban area of Jaipur city. During the showers, the treated and untreated waste waters and runoff waters get mixed and enter the lake through the various influx channels, and the lake water quality gets affected by the inflow of waste water. The main objective of this work was to use the *Moringa oleifera* seeds as a natural adsorbent for the treatment of wastewater in lake. *Moringa oleifera* is a tropical, multipurpose tree whose seeds contain high-quality edible oil 40% by weight and water soluble, non-toxic protein that act as an effective coagulant for the removal of organic matter in water and waste water treatment. Laboratory Jar test procedure had been used for coagulation studies; an experiment runs using lake water. Water extracts/powder of *Moringa* seed applied to treat polluted water of lake. In present study various doses of *Moringa oleifera* seed coagulant viz. 100 mg/L, 200 mg/L, and 400 mg/L were taken and checked for the efficiency dose on treated and untreated polluted water. Turbidity and color removal is one of the important steps in a waste water treatment processes. The results indicate significant reduction in turbidity and color. Standard plate count was significantly reduced fecal coliform levels too. All parameters were reduced with the increased dose of *Moringa oleifera*. It was clear from the study *Moringa oleifera* seed was shown to be a potential bio-coagulant, for treatment of sewage laden polluted water in the lake.

Keywords : coagulant, *Moringa oleifera*, plate count, turbidity, wastewater

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