Reducing Water Turbidity Using Natural Coagulant Mangifera indica (Valencia Pride Mango)

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Coagulation/flocculation is the process of treating turbid water by using coagulants to clump fine particles and collecting them into a floc for removal. American Samoa uses synthetic coagulants, which are known for its hazardous residual byproducts from aluminum and iron. In order to effectively reduce turbidity in surface water while using eco-friendly materials, an experiment was conducted using Mangifera indica (Mango), a plant that abundantly grows in tropical climates. As an organic coagulant high in polysaccharide and protein, which are both effective in removing fine particulates by clumping them together, it is hypothesized that Mangifera indica will be more effective in reducing turbidity levels of surface water than inorganic coagulants like Aluminum Sulfate. For Test 1, the turbidity level of the control water sample was 66.72 FAU. The Aluminum Sulfate solution reduced the turbidity level of the control to 3.09 FAU, and the Mango seeds showed a reduction of 49.51 FAU. For Test 2, the control had 73.97 FAU, the alum reduced the turbidity to 0.00 FAU, and the mango seed, 57.26 FAU. Test 3 revealed slightly different results. The control water sample had 65.36 FAU, the alum solution, 0.00 FAU, but the mango seed solution increased the turbidity level to 113.99 FAU. For all three tests, the results proved that aluminum sulfate was more effective than mango seed in reducing turbidity of the control water sample.

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