

Abstract

Safe drinking water is one of the biggest problems in front of all over the world. It is very important to treat the waste water to avoid a bad impact on human being and surrounding environment. Current studies show great potential in plant extracts as a low-cost technology in purifying water. Continuous use of Alum in the treatment of water can cause neurological diseases like Alzheimer's disease. Therefore, it has become a need to treat the water by using some natural coagulants. Natural coagulants are the coagulants which extracted from natural plants or animals. In this study, natural coagulant *Aloe vera* gel has been used as a coagulant aid to treat the water. Use of *Aloe Vera* gel as coagulant aid with can effectively reduce the amount of alum required.

The purpose of this study was assess the performance of Aloe Vera plant extract as a coagulant agent for drinking water treatment.in water treatment. Test water was obtained from Chiromo River during a dry season. The turbidity of raw water was found to be 46 NTU. Jar test procedures were performed using aluminium sulphate (alum) as a coagulant and *Aloe Vera* gel as a coagulant aid to determine optimum pH, optimum dosage and mixing regime that would yield optimum reduction of turbidity. Turbidity, colour, alkalinity and pH were measured before and after tests. The optimum pH was found by adjusting pH of jars using lime and same coagulant dose of 10 mg/l. Optimum pH was found to be 6.5. The optimum aluminium sulphate dose was found to be 40 mg/l and the optimum *Aloe Vera* gel dose was found to be 5% dilution. Tests to demonstrate effects of varying velocity gradients and mixing time were performed. Among the analytical parameters, turbidity gave the most reliable results as to the determination of efficient velocity gradients and mixing times. Tests indicated that the use of *Aloe Vera* gel as a coagulant aid was successful in reducing turbidity by 89% to suitable concentrations while using low levels of aluminium sulphate, 2% more efficient compared to using alum alone.

