

Original Paper

Effectiveness of Moringa Oleifera Coagulant Protein and Chitosan as natural coagulant aids in removal of colloidal particles and bacteria from turbid waters

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Abstract

Background and Objective: In recent years, chitosan and Moringa oleifera Coagulant Protein a natural coagulant were used in order to reduce the problems occur from chemical coagulants. This investigation was done to determine effectiveness of Moringa Oleifera Coagulant Protein and Chitosan as natural coagulant aids in removal of colloidal particles and bacteria from turbid waters.

Materials and Methods: In this interventional- quasi experimental study, the experiments were run by using synthetic water having low(10-20NTU), medium(100-120NTU) and high (200-220NTU) initial turbidities. In order to determine optimum pH and dosage of coagulant and coagulant aids, a conventional jar test apparatus was employed. Turbidity reading were carried out using a Hach model 2100P Turbidimeter. The samples were taken from the top four inch of the suspension for turbidity and bacteria removal measurement.

Results: Optimum dose of alum for waters with three different initial turbidities were 20, 40, and 20 mg/l, respectively. Optimum pH was between 7-7.5. Moringa oleifera Coagulant Protein and chitosan were reduced the required dosage of alum from 12.5% to 62.5% and from 50% to 87.5%, respectively, in different turbidities and residual aluminum was reduced to standard limit (0.2mg/l). The bacteria removal efficiency were from 90% to 99.9999%. It was found when samples were stored during 24 hours; regrowth of E.coli was not observed.

Conclusion: This study showed that natural coagulant aids can reduce the turbidity to below 5NTU without filtration in optimum condition.

Keywords: Chitosan, Moringa oleifera, Coagulant Protein, Coagulant aid, Water treatment

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