Optimization of process conditions in water treatment through coagulation diagrams, using *Moringa oleifera* Lam and aluminium sulphate

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**ABSTRACT**

The construction of coagulation diagrams is provided to obtain colour, turbidity and compounds with absorption at UV\(_{254}\) nm removal by associating the coagulants *Moringa oleifera* Lam and aluminium sulphate to define the optimal conditions of the process in water treatment. Experiments were performed in jar test with several coagulant dosages and coagulation pH. Optimal conditions for raw water with high colour/turbidity were obtained at pH values ranging from 7.5 to 8. After filtration, three dosages of association aluminium sulphate—*M. oleifera*, 25 ppm/300 ppm; 20 ppm/350 ppm and 15 ppm/400 ppm, performed efficient removal of evaluated parameters, namely 97.7% plus for colour and turbidity and 68.2% for compounds with absorption at UV\(_{254}\) nm. Results showed that the use of coagulation diagram is useful since it provides development of tests in optimal conditions, depending on water initial characteristics. The association of coagulants aluminium sulphate—*M. oleifera* may be considered an alternative technique for conventional water treatment.

**Keywords:** Water treatment; Coagulation diagrams; Association of coagulants; *Moringa oleifera* Lam; Aluminium sulphate