Exploration of various Indonesian indigenous plants as natural coagulants for synthetic turbid water

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Abstrak

Avaibility of clean water is one of the biggest problem, especially in developing countries. The simplest way to treat turbid water is using coagulation. However, chemical coagulant such as alum and ferrum has several drawbacks, including high sludge volume and negative health impact when the water is consumed. Natural coagulants offer better option, especially with its avaibility, low in price, lower sludge volume, and comparable effectiveness with chemical coagulant. In this study we utilize Moringa oleifera, Carica papaya, and Leucaena leucocephala seeds, which are indigenous plants in Indonesia, as natural coagulant. FTIR study was done to qualitatively identify the possible active coagulant agent in the seeds. The coagulant performance for turbidity removal of synthetic kaolin water was studied using jar test apparatus at various coagulant dosage and pH. Functional groups of –OH, N-H, C=O, primary, secondary, and tertiary amides were identified in all seeds. The dosage and pH gave no effect to turbidity removal, when M.oleifera was used as natural coagulant, but gave some effects in papaya and leucaena. The turbidity removal obtained in this study was comparable with other reported results, therefore it can be concluded that these seeds have potential to be used as natural coagulants.