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Performance of Myco-coagulant from Lentinus squarrosulus for Turbidity Reduction in a Settling Column
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Abstract
Coagulation and flocculation are integral basic unit processes for conventional water treatment plants. Usually, chemical coagulants are used in most of the treatment plants. However, the search for natural bio-coagulants is ongoing to reduce the negative impacts of chemical coagulants on human health and the environment. In this research, a natural bio-coagulant from a local fungus (Lentinus squarrosulus) was produced. The sedimentation process in river water by this myco-coagulant was investigated using a settling column. Kaolin suspension was used as synthetic turbid water for the settling column tests. Detention time and the overflow rate of the particles are necessary to design sedimentation basins for water treatment plants. As such, tests were conducted to plot the iso-removal lines for the kaolin particles. Such data is required to design sediment or settling basins for the water treatment facilities. Therefore, detention times and overflow rates of the kaolin particles were calculated for an optimum myco-coagulant dose of 1% (v/v). To reduce 80% of the initial turbidity from the kaolin suspension, the overflow rate and detention time of the sedimentation tank should be 41.6 m/day and 59.5 minutes, respectively. In contrast, similar ranges of overflow rates and detention times could remove only about 23% of the turbidity from the kaolin suspension without any myco-coagulant. This novel, natural and biodegradable coagulant is found to have the potential for reducing turbidity in river water; therefore, also can be a good candidate for the coagulation-flocculation process in water treatment plants. ©Copyright Jebun.

Author Keywords
Myco-coagulant; particle size distribution; river water treatment; sediment basin; turbidity

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