



Decolorization and removal of chemical oxygen demand (COD) of rice grain-based biodigester distillery effluent (BDE) using inorganic coagulants

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ABSTRACT

The removal of COD and color from biodigester effluent (BDE) of rice grain-based distillery was studied using inorganic coagulants such as $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$, Alum, FeCl_3 , AlCl_3 , and $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$. The $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ was found to be the best among all coagulants provided maximum 91% COD reduction and 85% color reduction with 60 mM Cu^{2++} at a optimum initial pH (pH_i) 6. The pH of the effluent/coagulant mixture showed significant role in the removal of harmful substances from the BDE. Settling and filterability characteristics of the treated BDE slurry were found to be dependent on coagulant type and treatment conditions. High COD and color reductions of the BDE in the coagulation process show a better alternative to the conventional bio-aerobic treatment process applied for the treatment of wastewater.

Keywords: Rice grain-based biodigester effluent; Chemical oxygen demand; Settling; Filtration; Coagulation

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