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Usage of *Stychnos potatorum* seeds for reduction of chemical oxygen demand in laundry effluent

D.P.C Sonali and Y.L.N. Mathotaarachchige

Department of Chemistry, Faculty of Science, University of Kelaniya

The untreated wastewater discharged from laundry processes (grey water) is now a major pollution source for surface waters. The objective of this study was to assess the reduction of chemical oxygen demand (COD) from laundry effluent using raw *Strychnos potatorum* (SP) seeds (coagulant) and activated carbon prepared from SP seeds (ACSP) (adsorbent). Optimization studies for treatment time and coagulant/adsorbent dose were done for each case to investigate the optimum parameters to achieve the maximum reduction of COD.

Optimization of treatment time was done agitating the effluent (800.0 mL) and SP seed pieces/ ACSP particles (25.0 g). Samples (10.00 mL) were collected from the reactor at 10 min time intervals, while the whole treatment was conducted up to 100 min. A control study was done with all conditions the same as the treatment study, but without using SP seed pieces or ACSP particles. Optimization of coagulant/adsorbent dose was done by agitating the sample (800.0 mL) with different doses of SP seeds/ACSP varying from 5-50 g. The COD in each sample was measured by using the closed reflux method followed by dichromate titration.

In treatment of laundry effluent (initial COD 3230 mg/L), the maximum percentage reduction of COD by SP seeds and ACSP under optimized conditions were 60% and 90% respectively. Optimized treatment time and coagulant/adsorbent dose for SP seeds was 60 mins and 35 g/800 mL and for ACSP 30 mins and 30 g/800 mL. This study revealed that ACSP is a more efficient agent than raw SP seeds,to reduce COD in laundry effluent. This would be due to the increased pore size of ACSP compared to raw SP seeds, which was clearly proven by the SEM images. However, both agents can be utilized as an effective and less expensive coagulant/adsorbents for the reduction of COD in laundry and textile wastewater.

Key words : *Stychnos potatorum,* COD, Activated carbon

nadeesha@kln.ac.lk +94 112903259