Biosorbability of coconut husk char in polyatomic ions sequestration from contaminated surface water

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Abstrak

Agricultural waste has increased colossally with development in agricultural production causing environmental nuisance and degradation. Utilization of coconut husks, one of such type of waste, as a biosorbent for polluted surface water treatment, was considered in this study. Polluted surface water was gently passed through two similar columns loaded with 100 and 200 g of coconut husk char respectively. The treated water samples collected after 30, 60, 90, 120 and 150 mins were examined for SO42-, NO3- and PO43- ions concentration. Removal efficiency for SO42-, NO3- and PO43- ions on 100 g coconut husk char after 150 mins detention time were 70, 78 and 91% respectively. Freundlich isotherm model gave a better description of the data (R2 > 0.96). Sorption data was well described by second order pseudo kinetics (R2 > 0.85). An amount of 100 g of the biosorbent has a strong affinity for these types of ion removal in contaminated water. Coconut husk char as a biosorbent is a panacea to significant concentrations of polyatomic ions in polluted surface water.