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A Review on Use of Canna Indica and Colocasia Esculenta in Phytoremediation Process for Wastewater Treatment

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Abstract: *Wastewater from kitchens generally has high concentrations of organic materials, oils, detergents, and nutrients like nitrogen and phosphorus. The capability of Canna indica and Colocasia esculenta to take up and decompose such contaminants renders them promising options for the treatment of wastewater. The studies have emphasized their effectiveness in decreasing biological oxygen demand (BOD), chemical oxygen demand (COD), and the concentration of heavy metals in wastewater. Their extensive root systems allow for the filtering and stabilization of contaminants, enhancing water quality. This review discusses the ability of Canna indica and Colocasia esculenta in phytoremediation of kitchen wastewater, highlighting their efficacy in pollutant removal, flexibility, and environmental advantages. As wastewater contamination remains a priority environmental issue, nature-based approaches such as phytoremediation provide affordable and environmentally friendly solutions to traditional treatment processes. This study discusses how these plants facilitate wastewater treatment through rhizofiltration, phytoextraction, and microbial relationships that improve pollutant degradation. The review also addresses the larger potential for application of these plants in rural and urban wastewater management. Their cost-effectiveness, low maintenance, and double advantages of environmental remediation and biomass yield make them good options for decentralized water treatment systems. Seasonal fluctuation, pollutant tolerance, and biomass disposal are some challenges that need to be overcome for maximizing their performance. New advancements in plant-microbe interaction and wetland engineering are recommended for improving their remediation potentials. Canna indica and Colocasia esculenta exhibit great potential for phytoremediation of kitchen wastewater. With research and technology enhancement, these crops can be included in sustainable water management systems to help achieve cleaner water bodies and better ecological well-being. Scaling up phytoremediation schemes, enhancing plant resistance, and maximizing wastewater treatment efficiency through hybrid treatment processes are areas that future research needs to address.*

Keywords: Phtoremediation , Canna indica , Colocasia esculenta, Wastewater treatment

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