

Biosorptive removal of cobalt from aqueous solution by using native and thiourea modified *Pennisetum glaucum*

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ABSTRACT

The purpose of this investigative research is to find the acceptable solution for the removal of Co(II) by using native and modified *Pennisetum glaucum*. Comparison of biosorption parameters for native and modified material confirmed the promising efficiency of modified material due to active functionalities and exposed surface area. Physiological characteristics were observed by SEM, EDX and FT-IR analysis. Biosorption batch process was performed as function of biosorbent dose, contact time, initial Co(II) ion concentration, solution temperature and pH. Experimental data was investigated by known isothermal models. The Langmuir isotherm fitted well and the RMSE value was calculated using the non-linear approach. Kinetic studies followed the pseudo-second order and thermodynamic parameters ensured the appreciable biosorption behavior of thiourea modified *Pennisetum glaucum*.

Keywords: *Pennisetum glaucum*; Biosorption; Kinetic studies; Thermodynamic; Thiourea

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