

Uptake of Copper by Dead Biomass of Burkholderia cenocepacia Isolated from a Metal Mine in Pará, Brazil

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Abstract : In this study was developed a natural process using a biological system for the uptake of Copper and possible removal of copper from wastewater by dead biomass of the strain Burkholderia cenocepacia. Dead and live biomass of Burkholderia cenocepacia was used to analyze the equilibrium and kinetics of copper biosorption by this strain in function of the pH. Living biomass exhibited the highest biosorption capacity of copper, 50 mg g⁻¹, which was achieved within 5 hours of contact, at pH 7.0, temperature of 30°C, and agitation speed of 150 rpm. The dead biomass of Burkholderia cenocepacia may be considered an efficiently bioprocess, being fast and low-cost to production of copper and also a probably nano-adsorbent of this metal ion in wastewater in bioremediation process. In this study was developed a natural process using a biological system for the uptake of Copper and possible removal of copper from wastewater by dead biomass of the strain Burkholderia cenocepacia. Dead and live biomass of Burkholderia cenocepacia was used to analyze the equilibrium and kinetics of copper biosorption by this strain in function of the pH. Living biomass exhibited the highest biosorption capacity of copper, 50 mg g⁻¹, which was achieved within 5 hours of contact, at pH 7.0, temperature of 30°C, and agitation speed of 150 rpm. The dead biomass of Burkholderia cenocepacia may be considered an efficiently bioprocess, being fast and low-cost to production of copper and also a probably nano-adsorbent of this metal ion in wastewater in bioremediation process.

Keywords : biosorption, dead biomass, biotechnology, copper recovery

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