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Growth and heavy metals accumulation by Spirulina platensis biomass from multicomponent copper containing synthetic effluents during repeated cultivation cycles

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Abstract

The metal bioaccumulation as well as biochemical changes in cyanobacterium Spirulina platensis biomass at its growth in multicomponent copper containing synthetic effluents during repeated cultivation cycle was investigated. It was demonstrated high capacity of metal accumulation by spirulina biomass from multicomponent systems, containing copper ions in concentration range 2.5–10 mg/L, along with iron, nickel and zinc. In systems with copper ions concentration 2.5 mg/L and 5 mg/L spirulina acted as a renewable biologic sorbent due to its ability to keep high metal accumulation capacity during 2–3 cultivation cycles. Capacity of renewable accumulator was ensured by maintenance of balance between spirulina biochemical components and expressed by moderate reduction of proteins content and optimal level of lipids content.

Keywords: metal bioaccumulation, biochemical components, renewable accumulator, neutron activation analysis, Spirulina Platensis

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