

REDUCTION OF TRACE ELEMENT IN FILTER CAKE FROM SUGARCANE INDUSTRY FOR THE USE IN AGRICULTURE

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The sugar and alcohol industry generates large amounts of byproducts, such as filter cake which have a great potential for the use in agriculture as soil improvers and fertilizers. However the use of this residue in the agriculture is limited by the presence of trace elements (TE). Bioleaching is a promising technique alternative for the treatment of different wastes. This study was performed in order to solubilize trace metals present in the filter cake from an sugarcane industry using the acidophilic bacterium, *Acidithiobacillus thiooxidans*. Experiments were carried out in shake flasks (150 rpm, 30°C) using the 9K medium that contain elemental sulfur as energy source and *At. thiooxidans* - FG01 (5% v/v) as inoculum. The pulp density of filter cake used was 10% (w/v). Parameters such as pH, Eh and solubilized TE were monitored. The final pH of the test inoculated with *At. thiooxidans* and control were 1.40 and 2.42, respectively. After 42 days of experiment, redox potential in the flask inoculated with bacterium reached 420 mV (vs Ag / AgCl sat), while 383 mV (vs Ag / AgCl sat) was achieved in the flask control. The inoculated test solubilized 12% of Cr, 85% of Ni and 66% of Zn, while the percentage of metals extraction in the control was of 0.4%, 51%, and 59%, respectively. So bioleaching proved to be an alternative to reduce TE present in the filter cake, ensuring their application in agriculture and thus allowing the reduction of the use of chemical fertilizer and risk of bioaccumulation of TE in the soil.

Palavras-chaves: Bioleaching, *At. thiooxidans*, filter cake, trace elements

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