Fenton-like reactions for effluent remediation of cassava processing

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Abstract

Manipueira is an effluent derived from processing of cassava flour and starch. Due to its high organic load, attributed to presence of high concentrations of carbohydrates, it causes an environmental impact when untreated. Conventional treatment processes are inefficient and, thus, the objective of this study was to evaluate Fenton and photo-Fenton like reactions for treatment of manipueira, using ferrous ions derived from preliminary coagulation step. Raw effluent was characterized and compared with subsequent results in terms of turbidity, absorbance (A/A_0), electrical conductivity and Chemical Oxygen Demand (COD). The reactions were evaluated by 3 variations of pH and hydrogen peroxide concentrations, verifying more relevant analytical responses in terms of color and turbidity. At higher pH and peroxide concentration, a decay of 64% was observed in relation to turbidity and 27% in relation to COD. Therefore, the use of iron remaining in preliminary treatment stage shows a great potential for making tertiary treatment more economical and less aggressive to environment, by the reduced production of residual sludge, which reduces polluting potential of the effluent also in terms of solid waste.

Keywords: *Agroindustrial Effluent, Advanced Oxidative Process, Tertiary Treatment.*