Production of Biofuels from Cassava Starch Producing Wastewater

F. Lamaison[a], V. Reginatto[b], E. R. Amante[c], R. V. Antônio[d]

a. Universidade Federal de Santa Catarina, Departamento de Engenharia de Alimentos, Florianópolis, franinha14@ig.com.br

b. Universidade Federal de Santa Catarina, Departamento de Ciência e Tecnologia de Alimentos, Florianópolis, valeria@cca.ufsc.br

c. Universidade Federal de Santa Catarina, Departamento de Ciência e Tecnologia de Alimentos Florianópolis, eamante@cca.ufsc.br

d. Universidade Federal de Santa Catarina, Florianópolis, Departamento de Engenharia de Alimentos rantonio@mbox1.ufsc.br

Abstract

Greenhouse gases and global warming are current problems caused by the high fossil fuels demand. In this context it is important to search for alternatives energy sources. Biofuels, as methane and hydrogen can be produced from organic wastes or wastewater rich in carbohydrates. In the present work it was studied the possibility to use the cassava processing wastewater, named manipueira, for fermentative biofuels production. An anaerobic bioreactor with 2 liters volume was used applying an organic loading of 2997.5 mg/L.d of COD. The performance of the bioreactor was monitored daily by the determination of COD, acidity and pH in the manipueira and in the bioreactor effluent. It was observed a COD consumption of about 22%. The average of the total biogas volume produced daily was 469 mL. The theoretical composition of this biogas was calculated as 35.93 and 64.07% of methane and hydrogen, respectively. Such values were very similar to the experimental ones, 37.67% of methane and 62.32% of hydrogen. This work showed the possibility to use cassava processing wastewater, a high concentrated organic pollutant, as substract for production of hydrogen, a very energetic and clean biofuel.

Keywords: wastewater, manipueira, fermentation, biofuels.