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Production of biogas from acid and alkaline pretreated cocoa pod husk (*Theobroma cacao L.)*

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Abstract : The aim of this work was applied acid and alkaline pretreatments to cocoa pod husk (CPH) in order to increase the potential of biogas production by anaerobic digestion. Different ruminal fluid (RF) / pig manure (PM) relationships were studied (2:1, 1:2 and 1:0). The inoculum selected was RF:PM = 2:1 ratio to obtain a biomethanation potential value of 0.120 m3 CH_4/kg VS. The effect of acid and alkaline pretreatment in CPH using H_2SO_4 and NaOH was evaluated. The alkaline pretreatment showed the best results in reducing the lignin content, reaching a value of 43.78 %. Anaerobic digestion process using as substrate the pretreated CPH and the inoculum selected, with an organic load of 1, 2 and 3 g $VS_{Inoculum}$/g $VS_{Substrate}$ were analyzed. The results show the potential of the CPH as lignocellulosic substrate for the production of biogas, which improves the value to these products in the agricultural sector.
Keywords:cocoa pod husk, biogas, anaerobic digestion, lignocellulosic biomass, pretreatment.

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