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Study of subcritical water hydrolysis of green coffee powder to ethanol second generation

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The purpose of this research is to study the processing of waste from coffee industry by hydrolysis in subcritical water to produce sugars that can be subsequently fermented to obtain second generation ethanol. A semi-continuous process was used, at temperatures of 150, 175, 200 and 250°C, pressure of 22.5MPa and water flow rate of 10mL/min. The content of total reducing sugars and composition were analyzed before and after the subcritical water hydrolysis. The best results for coffee powder were 9g total reducing sugars (TRS)/100g (w.b.) raw material, at 150°C and 22.5MPa. As temperature increased TRS yield decreased due to degradation. There was low yield of fermentable sugars from green coffee powder. Glucose and cellobiose were found, while arabinose and xylose were not detected. As the temperature of the hydrolysis process increased, the amount of fermentable sugars recovered decreased, which is possibly due to sugars degradation.

Biography

Forster-Carneiro T is a Professor in the Area of Biotechnology and Bioengineering-Research Line-Biological treatment of waste of food industry. She has completed her PhD in Chemical Engineering from the University of Cadiz, Spain (2005), Postdoctorate in Civil Engineering (Sanitation and Solid Waste) at University of Campinas (UNICAMP) (2010) and Post-doctorate in Food Engineering (FEA) at UNICAMP (2011). She has experience in the area of bioengineering, sanitation and environment.

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