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Advances in carbohydrates production and hydrolysis of agroindustrial residues for fuel ethanol production

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The production of amylolytic and cellulolytic enzymes is being studied from Brazilian agribusiness residues such as bagasse and cane straw, cassava solid waste and wheat bran. Fungi of the genus *Rhizopus, Trichoderma, Aspergillus, Rhodotorula* are used for the development of enzymatic bioprocess where formulations of culture media, submerged and solid-state cultures, physical-chemical parameters and type of inoculation are being evaluated. In a second step, some agricultural residues such as bagasse and cassava solid waste were hydrolysate by a mixture of produced and commercial enzymes to obtain fermentable sugars for second generation ethanol. In a third step, fermentations with *S. cerevisiae* are being conducted aiming the ethanol production using hydrolysed wastes and thereby testing the efficiency of bioprocesses. Among the hydrolysis in progress is highlighted cassava solid waste which up to 60% (w/w) of fermentable sugars were obtained using a mixture of amylases and fibrinolytic enzymes. The alcoholic efficiency superior at 80% has shown that some of the hydrolysates obtained are very promising for industrial application.

Biography

Professor in the graduation (Biotechnology Engineering and Biological Science at UNESP) and post-graduation (UNESP and PhD Program in Bioenergy USP-UNICAMP-UNESP) courses . He was Coordinator of graduation courses and chief of the Biological Science department at UNESP. Bachelors at Biological Science from UNESP (1986), Masters in Food Science from UNICAMP (1990), Doctorate at Food Engineering from UNICAMP (1995) and Associate Professor (2004) from UNESP. He has several papers and some books published in reputed international institutions in bioprocess acting on: Biofuels (ethanol) and Food Ingredients production (special sugars, biopolymers and yeast derivatives). Currently member of the executive board of IPBEN (UNESP Institute of Bioenergy) and consultant of some institutions and scientific journals.

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