Accelerating Scientific Discovery 2nd International Conference and Exhibition on FOOD TECHNOLOGY, BIOPTOCESS & CEII CUITURE

October 28-30, 2013 Kansas City Marriott Country Club Plaza, USA

Pretreatment strategies to explore biovalorization potential of lignocellulosic agro-wastes for ethanol production: Ecological & economical perspectives

Latika Bhatia and Sonia Johri Institute of Technology & Management University, India

cent breakthrough in industrial biotechnology offer important opportunities for the utilization of agro-industrial residues Klike wheat straw, bagasse, peel of pineapple, sweet lemon and litchi. Some of these residues as a complex biological material are an important by product of several cottage and major hospitality industries. Chemically they contain cellulose, hemicelluloses, lignin and simple sugars. Due to their availability and value, they are capable as an ideal substrate for microbial process for production of bioethanol. Pretreatment operations have resulted in improved substrate utilization by microorganisms. The pretreatment process has pervasive impact on the overall operation. Microwave irradiation offer enormous benefits to the synthesis of biofuels including energy efficiency, development of a compact process and rapid heating and instant on-off process. The major objective of the present investigation was to evaluate the effect of steam explosion, microwave and solar pretreatment on above mentioned lignocellulosic agrowastes for improved yield of reducing sugar and bioethanol production. The optimization criterion was the fermentable sugar yields, which were analyzed by HPLC. The best result of hydrolysis was obtained from the steam explosion pretreatment with 1% HNO, and hence is proven to be the best pretreatment strategy for all the substrates. Slacked lime can also be used as an economically viable source for pretreatment process. These results show that an integrated exploitation of these lignocellulosic wastes from agricultural production is economically possible and highly advantageous for ethanol production utilizing suitable microorganism. Results indicate that only a mild pretreatment is necessary in an industrial, economically feasible system. Structural changes of all substrates before and after physico-chemical pretreatment were further investigated through Fourier transformed infrared spectroscopy (FTIR).

Biography

Latika Bhatia received her Master's of science in Applied Microbiology & Biotechnology. She received (IASc-INSA-NASI) summer research fellowship, and worked in lab of Prof. Watve, I.I.S.E.R. Pune for two months. She has university teaching experience of 10 years and about 10 research publications. She has qualified CSIR/UGC Joint National Eligibility test (NET). Presently she is working as Assistant Professor in ITM, Gwalior. Her thrust area of research is Bioethanol production from agrowastes in economic and ecological manner in field of Biotechnology. She has attended about 15 national and international conferences.

latikabhatia1@yahoo.co.uk