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Microbial based biodiesel production using co-hydrolysis process

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Despite certain environmental advantages over fossil diesel, land crops-derived biodiesel may not satisfy the increasing worldwide demand for the transportations fuel, due to the high production costs. The same may be true if microorganisms such as filamentous fungus are cultivated as feedstock for biodiesel production in synthetic medium. Trying to overcome cost problems this study evaluated the *Mortierella isabellina* ATCC2613 bioconversion potential of corn stovers into microbial lipids to be used for biodiesel production. A co-hydrolysis process, which applied dilute acid pretreatment without detoxification and liquid –solid separation, was directly followed by enzymatic saccharification and lipid fermentation. The first step involved the conversion of lignocellulose material into monomeric sugars (glucose and xylose), and then the fungus was inoculated into the co-hydrolysate medium to accumulate lipids. The corn stover co-hydrolysate used as the carbon source in these cultures showed comparable results to the synthetic medium. Nevertheless, this research revealed that the applied treatment may lower the production costs and improve the potential of using advanced lignocellulosic material for biodiesel, with a comparable reduction of the CO₂ emission.

Biography

Javid Hussain is currently a PhD Research Scholar, at Bioenergy Lab, Institute of Biology, Federal University of Bahia, Brazil. He received Master's degree in Chemistry from Institute of Chemical Sciences, University of Peshawar, Pakistan. After completing Master's, he received three offers for PhD at the same year from three countries, Australia, Brazil and South Korea. As his choice he accepted (TWAS), The World Academy of Science Awards, and joined Bioenergy lab, as PhD scholar in 2012 Institute of Chemistry, Federal University of Bahia, Brazil. Since April, 2013 he got another visiting research scholar awards from CNPq Brazil, and received three acceptance letters from Texas A&M University, Iowa State University and Michigan States University, United States though he joined Bioenergy lab, at Department of Bio system and Agricultural Engineering, Michigan States University as visiting research scholar under. During that time he published two articles as first author. He attained more than five international bioenergy research conferences and meeting in United States, Canada and in Brazil. In last five years he has about 15 publications in environmental chemistry and bioenergy research studies area.

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