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## Evaluation of rise husk for bio-hydrogen production

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Fossil fuels do not meet needs of increasing energy demands and bring along as well as the climate change, global warming, environmental issues, such as the deterioration of air quality. Bio-hydrogen production from organic wastes is an attractive approach, since it can remove organic biomass while simultaneously producing clean hydrogen energy. The EU target till 2020 is to provide 20% energy from renewable energy sources of the total within the use of 10% renewable energy sources in transport rather than the use of petrol and diesel. Among these resources it counts wastes, residues, non-food cellulosic materials and lignocellulosic materials. In achieving the goals of Europe; bio-hydrogen production from waste sources has gained importance in recent years. It stands out as one of the potential responses that could form the backbone of green technology as well as provides to achieve sustainable development, renewable energy use, mitigation of the effects greenhouse gases, high energy value ( $122 \text{ kJ g}^{-1}$ ), and from environmental point of view waste reduction and recycling. Rice-husk as a lignocellulosic waste can be utilized for bio-hydrogen production. In this study different rice husk concentrations was subjected to batch dark fermentation for bio-hydrogen production. 310 ml serum bottles were used in mesophilic and static conditions. Effects of substrate concentration (1-20 gdw) on the rate and yield of bio-hydrogen formation were investigated in solid state fermentation. The highest CHF (76 ml) were obtained with 15 gdw substrate concentration. Butyric acid was the main volatile fatty acid produced in the fermentation media. pH varied between 6.5-5.5. Soluble sugars were around 200-400 mg L<sup>-1</sup> and the main monosaccharide in the fermentation media were found as glucose and cellobiose. The highest yield (11 ml H<sub>2</sub> g<sup>-1</sup> substrate) was obtained with 2 gdw and specific hydrogen production rate was obtained with 15 gdw.

### Biography

Serpil Ozmihci has completed her PhD in Dokuz Eylül University in 2005. She is a Assistant Professor in Environmental Engineering Department of Dokuz Eylül University. She has published nearly 20 articles related to biofuels reasearch.

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