World Academy of Science, Engineering and Technology
International Journal of Biotechnology and Bioengineering
Vol:8, No:12, 2014

Biohydrogen Production from Starch Residues

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Abstract : This review summarizes the potential of starch agroindustrial residues as substrate for biohydrogen production. Types of potential starch agroindustrial residues, recent developments and bio-processing conditions for biohydrogen production will be discussed. Biohydrogen is a clean energy source with great potential to be an alternative fuel, because it releases energy explosively in heat engines or generates electricity in fuel cells producing water as only by-product. Anaerobic hydrogen fermentation or dark fermentation seems to be more favorable, since hydrogen is yielded at high rates and various organic waste enriched with carbohydrates as substrate result in low cost for hydrogen production. Abundant biomass from various industries could be source for biohydrogen production where combination of waste treatment and energy production would be an advantage. Carbohydrate-rich nitrogen-deficient solid wastes such as starch residues can be used for hydrogen production by using suitable bioprocess technologies. Alternatively, converting biomass into gaseous fuels, such as biohydrogen is possibly the most efficient way to use these agroindustrial residues.

Keywords : biofuel, dark fermentation, starch residues, food waste
Conference Title : ICIBB 2014 : International Conference on Industrial Biotechnology and Bioenergy
Conference Location : Paris, France
Conference Dates : December 30-31, 2014