

Outlook of fermentative hydrogen production techniques: An overview of dark, photo and integrated dark-photo fermentative approach to biomass

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ABSTRACT

Biomass can be a sustainable choice for bioenergy production worldwide. Biohydrogen production using fermentative conversion of biomass has gained great interest during the last decade. Besides being an efficient transportation fuel, biohydrogen can also be a low-carbon source of heat and electricity. Microbes assisted conversion (bioconversion) can be take place either in presence or absence of light. This is called photo-fermentation or dark-fermentation respectively. This review provides an overview of approaches of fermentative hydrogen production. This includes: dark, photo and integrated fermentative modes of hydrogen production; the molecular basis behind its production and diverse range of its applicability industrially. Mechanistic understanding of the metabolic pathways involved in biomass-based fermentative hydrogen production are also reviewed.

KEYWORDS:

Hydrogen; Biomass; Fermentation; Dark and photo fermentation