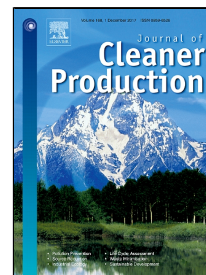


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Roslindawati Haron, Ramli Mat, Tuan Amran Tuan Abdullah, Roshanida A. Rahman



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OVERVIEW ON UTILIZATION OF BIODIESEL BY-PRODUCT FOR BIOHYDROGEN PRODUCTION

Roslindawati Haron^a, Ramli Mat^a, Tuan Amran Tuan Abdullah^b and Roshanida A. Rahman^c

^aDepartment of Chemical Engineering, ^bInstitute of Hydrogen Energy, ^cDepartment of Bioprocess and Polymer Engineering, Faculty of Chemical and Energy Engineering
Universiti Teknologi Malaysia (UTM), 81310 UTM Johor Bahru, Johor, Malaysia.

Corresponding Author's E-mail: ramli@cheme.utm.my

ABSTRACT

The booming of biodiesel production has led to the increase in biodiesel by-product or crude glycerol, which has been proven to be a potential raw material or feedstock to be adopted in green technologies for conversion into valuable products. Its versatility and sustainable nature make it a good candidate to replace petroleum based products. Efforts have been carried out to utilize crude glycerol into biohydrogen via glycerol fermentation. Biotransformation of crude glycerol is promising because the capital investment and operation is cheaper, and it can help in reducing waste thus making the process itself a clean process. This paper reviews on the latest development of biohydrogen production from biodiesel by-product with the main focus on glycerol fermentation. It also sheds light on the challenges, effects of operating parameters on biohydrogen yield, the microorganisms and their pathways, and the possible technologies that can be derived from this bioconversion of biodiesel waste.

Keywords: Glycerol; Biodiesel; Biohydrogen; Fermentation; Dark-Fermentation

1. Introduction

Urbanization and globalisation marks the intensifying demands in world fuel consumptions, especially in the transport, production/manufacturing and housing sectors of developed and fast developing countries. These have in turn lead to several adverse effects such as depletion in fossil fuel from the extensive exploitation of the present oil and gas reservoirs (Chuah et al., 2016), and anthropogenic CO₂ emission (Lee et al., 2016). Renewable energy such as biohydrogen, biomethane or biofuels can be used to replace the petroleum-based energy to cater the increasing demand of energy,. This is because these types of energy are recovered or produced from unlimited resources including wastes.

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