JEP> Vol.1 No.4, December 2010

OPEN ACCESS

Influence of Metal Ions on Hydrogen Production by Photosynthetic Bacteria Grown in Escherichia coli Pre-Fermented Cheese Whey

PDF (Size:1274KB) PP. 426-430 DOI: 10.4236/jep.2010.14049

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ABSTRACT

The photosynthetic bacteria, Rodospirillum rubrum, produced hydrogen when grown in cheese whey in presence of light. The production increased three times as much when whey was used after being incubated in presence of Escherichia coli at 37℃ for 5 days, giving a total of 3600 ml of H2 in 10 days. The presence of Fe ions (5 mg/L) enhanced H2 production of treated whey to about 6000 ml in 10 days. Mo ions (0.3 and 1.6 mg/l) did not affect achieved H2 production of treated whey. However, when Fe and Mo ions were present together, the production was comparable with that of Mo ions alone, i.e. Mo prevented Fe of producing any enhancing effect. The addition of Mn ions (7.68 mg/L) to treated whey containing Fe (5 mg/L) and Mo ions (8 mg/L) increased H2 production to give about 9500 ml/10 days.

KEYWORDS

Hydrogen Production, Photosynthetic Bacteria, Rodospirillum rubrum, Metal Ions, E. coli, Fermentation

Cite this paper

F. Salih and M. Maleek, "Influence of Metal Ions on Hydrogen Production by Photosynthetic Bacteria Grown in Escherichia coli Pre-Fermented Cheese Whey," *Journal of Environmental Protection*, Vol. 1 No. 4, 2010, pp. 426-430. doi: 10.4236/jep.2010.14049.

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