

**ChemTech****International Journal of ChemTech Research**

CODEN(USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555

Vol.11 No.07, pp63-69,2018

Estimation of Kinetic Parameters during Enzymatic Hydrolysis in Immobilized Mode**Sreyashi Ghosh¹, Dipayan Chakraborty¹ and Sangita Bhattacharjee^{1*}****¹Department of Chemical Engineering, Heritage Institute of Technology, Chowbaga Road, Anandapur, Kolkata-700107, West Bengal, India**

Abstract: Whey is the major pollutant of the dairy industry which creates significant disposal problem because of its high BOD value. One option is to use whey permeate as an inexpensive feedstock for ethanol production. But as *Saccharomyces cerevisiae*, the most popular microorganism used in fermentation cannot directly convert lactose to ethanol and with the help of yeast strains it is not economically feasible. Enzymatic hydrolysis of lactose is a good solution because the hydrolyzed products can be consumed by lactose maldigesters. The enzyme β -galactosidase hydrolyzes lactose into glucose and galactose. Despite the high cost of enzyme attachment, immobilized β -galactosidase systems remain more economically feasible than free enzyme systems, as these processes may be performed continuously and offer the possibility of reutilizing the enzyme. In this context, the present work has been undertaken with an objective to suitably hydrolyze whey lactose with the help of enzyme entrapped calcium alginate beads. The lactose concentration was estimated using DNSA (Dinitro salicylic acid) method. The concentration of the glucose was measured using GOD-POD test. On the basis of the data analyzed, Hanes-Woolf plot was used to determine the kinetic parameters. The maximum rate of hydrolysis was found to be 0.556 mM/lit.min.

Keywords: Lactose, whey, enzymatic hydrolysis, Immobilized mode, kinetic study, Hanes-Woolf plot.