

Light Induced Esterification of Oleic Acid Catalyzed by Pseudomonas Cepacia Lipase

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ABSTRACT

This paper reports on new approach of light illuminated esterification of oleic acid catalyzed by an enzymatic catalyst. Immobilized Pseudomonas cepacia lipase was used as a biocatalyst. Enzyme catalyzed esterification reaction was chosen due to the wide attention from chemical and biotechnology industry. The reaction was conducted under light illumination and dark condition at same experimental condition. The result was obtained in the form of changes in oleic acid concentration throughout 2h of reaction. The results indicate significant changes in rate of reaction for light illuminated reaction compare to reaction under dark condition. The initial rate of reaction for light induced and dark reaction are 1.2mol/L.min, 1.1mol/L.min respectively. Influence of enzyme amount was experimented where it shows proportional increase with the amount of enzyme. Increasing the amount of enzyme also increases the availability of active sites of enzyme therefore the probability of light illumination activating the electron transfer in oxyanion hole increases with increase in energy level of electron lone pair. The results obtained indicate that light illuminating method for enzyme activation provide good alternative for future biotechnology industry.

KEYWORDS: Esterification, light induced, oleic acid, Pseudomonas cepacia.

DOI: 10.7763/IJESD.2014.V5.506