Production of Glycerol Carbonate from Biomass by Immobilized Lipase

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Biodiesel production process produces large amount of waste glycerol as a by-product. The price of glycerol decreased due to the increase of glycerol supply. The glycerol has been used to produce various higher value products. Glycerol carbonate is one of the higher value added products derived from glycerol. In this work, we investigated on various conditions for the synthesis of glycerol carbonate. To optimize the production of glycerol carbonate, we designed experiments sequentially. Glycerol carbonate production was performed with three kinds of immobilized lipase to select suitable enzyme for this process. Enzyme loading was performed with ranges of immobilized lipase concentration of 25-100 g/L. To select an optimized molar ratio of glycerol to dimethyl carbonate, experiments were performed at molar ratio of 4:1, 2:1, 1:1, 1:2 and 1:4. The effect of reaction temperature on glycerol carbonate production was performed at 40-70℃.