P45

Development of Nanoenzymes for the Production of Glucose from Seaweed and Various Polysaccharide

Li Hua Jin and Jung Heon Lee*

Department of chemical engineering, Chosun University, GwangJu, 501-759, Korea

The magnetically separable polyaniline nanofiber enzymes were developed for the recycle of enzyme and enhanced enzyme stability. The stability of enzyme was maintained over 90% for 8 days under room temperature and vigorous shaking conditions. The residual activity of immobilized enzyme was over 60% after 8 days incubation at 55℃. Glucose was produced from various polysaccharides, agarose, curdlan, cellulose, and sea weed with magnetically separable immobilized enzyme. Glucose production rate with curdlan was 1.2g/(l hr) and showed high decomposition rate due to high mass transfer. After 10 times recycle, the residual activity of immobilized enzyme was over 75%. 1 g/l of glucose was produced with 5 mg of immobilized enzymes after 1 day incubation of 10 g/l seaweed.

Key words: Nanoenzyme, seaweed, enzyme stability

P46

Use of Enzyme Coated Nanofiber for the Synthesis of Hexylglucoside Using CSTR and PFR

Hyo Joung Kim and Jung Heon Lee*

Department of Chemical Engineering, Chosun University Gwangju 501-759, Korea

Alkylglucosides, surfactants with good biodegradability and low toxicity, were produced by an enzymatic method to get a well-defined product. Polyaniline nanofibers (PANI) were used to immobilize beta-glucosidase. Glutaaldehyde was used to make enzyme coated nanofibers. Hexylglucoside was synthesized from glucose using immobilized beta-glucosidase (EC 3.2.1.21). The optimal reaction conditions for hexylglucoside synthesis from glucose were amphiphilic phase system, pH 5.0, and temperature of 37℃. Hexylglucoside was succesfully synthesized with CSTR and PFR.

Key words: Hexyl glucosides, beta-glucosidase, CSTR and PFR