

Saccharification of various seaweeds using enzymes coated nanobiocatalyst

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In this research, the productions of reducing sugars from various brown-algae, red-algae, and green-algae were examined. The magnetically separable polyaniline nanofiber was used as a carrier of the enzymes. Cellulase, lysing enzymes, and viscozymes are immobilized onto the surface of nanofibers for recycle and stability of enzymes. The original activity of enzyme Lysing enzyme was maintained over 90% for 30 days under room temperature and vigorous shaking conditions. The residual activity of immobilized enzyme was over 60% after 8 days incubation at 55°C. After 10 times recycle, the residual activity of immobilized enzyme was over 75%. Glucose was produced from various seaweeds, Hizikia fusiforme, Japonica and Enteromorpha with magnetically separable immobilized enzymes. Glucose production rate with the seaweeds were 4.3g/ (l hr) and showed high decomposition rate due to high mass transfer.