

Deproteination and Demineralization of Shrimp Waste Using Lactic Acid Bacteria for the Production of Crude Chitin and Chitosan

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Abstract : Deproteination and demineralization efficiencies of shrimp waste using two *Lactobacillus* species treated with different carbohydrate sources for chitin production, its chemical conversion to chitosan and the quality of chitin and chitosan produced were determined. Using 5% glucose and 5% cassava starch as carbohydrate sources, pH slightly increased from the initial pH of 6.0 to 6.8 and 7.2, respectively after 24 h and maintained their pH at 6.7 to 7.3 throughout the treatment period. Demineralization (%) in 5 % glucose and 5 % cassava was highest during the first day of treatment which was 82% and 83%, respectively. Deproteination (%) was highest in 5% cassava starch on the 3rd day of treatment at 84.4%. The obtained chitin from 5% cassava and 5% glucose had a residual ash and protein below 1% and solubility of 59% and 44.3%, respectively. Chitosan produced from 5% cassava and 5% glucose had protein content below 0.05%; residual ash was 1.1% and 0.8%, respectively. Chitosan solubility and degree of deacetylation were 56% and 33% in 5% glucose and 48% and 29% in 5% cassava, respectively. The advantage this alternative technology offers over that of chemical extraction is large reduction in chemicals needed thus less effluent production and generation of a protein-rich liquor, although the demineralization process should be improved to achieve greater degree of deacetylation.

Keywords : alternative carbon source, bioprocessing, lactic acid bacteria, waste utilization

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