

Investigation of modified method to increase degree of deacetylation of chitin polymer extracted from shrimp shell waste

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Chitosan is one of the most abundant polymers on the surface of the earth, which has been identified as value added by-product from the aquaculture industrial waste. Degree of deacetylation (DD) has been found to influence the functionality of the chitosan molecules in its applications. In commonly practiced extraction method of chitosan from shrimp shell waste, the yield is about 30-40% degree of deacetylation. This study aims to find out suitable low cost technology to produce chitosan with higher DD. The extraction method was based on retorting at 121°C and uses industrial grade chemicals with yields achieved at 87% of DD. The resulted chitosan was analyzed for DD, moisture content, ash content, water binding capacity and fat binding capacity. The analysis results were 44%, 87%; 6.68%, 5.92%; 42.83%, 30.34%; 746.04%, 952.94; 577.19 and 645.81% respectively for conventional and modified method. This modified method can produce high quality chitosan through increased DD and with improved functionality. It is suggested that further studies for applications of chitosan in product development and pilot scale study is recommended before transferring this technology.

Keywords: chitosan, degree of deacetylation, fat binding capacity, water binding capacity

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