

Acid Hydrolysis of Chitosan to Oligomers Using Hydrochloric Acid

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ABSTRACT

The natural chitosan polymer is widely used for medical and drug delivery applications. Low Molecular Weight Chitosan (LMWC) has superior properties compared to High Molecular Weight Chitosan (HMWC), which open new horizons for LMWC to various applications especially in the cosmetics, food, and pharmaceutical industries. LMWC is often produced from HMWC using different hydrolysis methods such as acid, enzymatic, and oxidative hydrolysis. For industrial applications, the acid hydrolysis using diluted hydrochloric acid (HCl) is preferred since it is simple, practical and can produce high yield. In this study a dilute concentration of 2M HCl was used for the preparation of LMWC. A high yield with average of 87% from the depolymerization reaction was obtained. The LMWC grades were characterized by FTIR, the intrinsic method was used to determine its molecular weight, whereas the degree of deacetylations (%DDA) was determined by the FDUV. Results showed that the prepared LMWC are fully deacetylated, and their production by this method is reproducible.

Keywords: Acid hydrolysis; Chitosan Oligomers; Degree of deacetylation

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