

C326582: MAJOR FOOD TECHNOLOGY

KEY WORD: CHITIN/CHITOSAN/DEACETYLATION/IRON CHELATING PROPERTY
BUSARAKORN MAHAYOTHEE : CHITIN DEACETYLATION AND
FERRIC ION CHELATING PROPERTY OF CHITIN AND CHITOSAN.
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Ph.D. 100 pp. ISBN 974-584-475-6

This research involved study on the preparation of chitosan by reacting chitin with 50% sodium hydroxide at temperature below 100 °C under normal atmospheric pressure. Four different temperatures (60 ± 1 °C, 70 ± 1 °C, 80 ± 1 °C and 90 ± 1 °C) and four different times (1, 2, 3 and 4 hours) were employed at the stage of deacetylation. In addition, effect of reaction temperature and time on degree of deacetylation and viscosity of chitosan were determined. The infrared spectrum of the prepared chitosans and a commercial chitosan were measured by infrared spectrophotometer. Assessments were made of chitin and chitosan for their differences in ferric ion (Fe^{3+}) chelating property, as influenced by four different shaking times (1, 2, 3 and 4 hours). The results indicated that degree of deacetylation and viscosity of chitosan were significantly affected by reaction temperature and time and the interaction between temperature and time ($p \leq 0.05$). Increasing temperature and time had a positive effect on degree of deacetylation but a negative effect on viscosity of chitosan. Preparation of chitosan at 90 °C for 4 hours was found to have the highest degree of deacetylation (4.08×10^{-3} mole ammonia per gram chitosan hydrochloride or 80.38%) and the lowest apparent viscosity (607.50 ± 17.68 centipoise at room temperature). The infrared spectrum of chitosan prepared was identical to that of commercial chitosan. No significant changes ($p > 0.05$) in percentage of ferric ion were found in chitin and chitosan with different shaking times. Additionally, chitosan prepared at 90 °C for 4 hours was suitable for chelating ferric ion (up to $99.16 \pm 0.14\%$).

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