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Base-free preparation of low molecular weight chitin from crab shell

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Highlights

- **One-step extraction of LMW-chitin from crab shell.**
- **The optimal condition for the extraction is obtained.**
- **The extracted LMW-chitin remains native crystal structure as α -chitin.**
- **The amide group of chitin is stable in the 5 wt% acid at 110 °C.**

Abstract

Low molecular weight (LMW) chitin exhibits antimicrobial activity, and its preparation generally employs high molecular weight chitin as raw material. Here we use raw crab shell as material to isolate LMW-chitin. The raw crab shell was treated with hydrochloric acid under different conditions, and the demineralization and deproteinization of acid to the raw and demineralized crab shell were examined. Under conditions of 3-5 wt% acid, 110 °C, and 180-600 min, the obtained LMW-chitin owns 92% purity and 53-80 kDa molecular weight. The method provides feasible one-step base-free strategy to directly obtain LMW-chitin from raw crab shell, and could be potentially extended to other chitin sources.

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