

Hydrogels based on seafood chitin: From extraction to the development

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ABSTRACT

Chitin is extensively applied in vast applications due to its excellent biological properties, such as biodegradable and non-toxic. About 50 % of waste generated during seafood processing is chitin. Conventionally, chitin is extracted via chemical method. However, it has many shortcomings. Many novel extraction methods have emerged, including enzymatic hydrolysis, microbial fermentation, ultrasonic or microwave-assisted, ionic liquids, and deep eutectic solvents. Chitin and its derivatives-based hydrogels have attracted much attention due to their excellent properties. Nevertheless, they all have many limitations. Therefore, the preparation and application of chitin and its derivatives-based hydrogels are still facing great challenges. This review focuses on the challenges and prospects for sustainable chitin extraction from seafood waste and the preparation and application of chitin and its derivatives-based hydrogels. First section summarizes the mechanism and application of several methods of extracting chitin. The different extraction methods were evaluated from the aspects of yield, degree of acetylation, and protein and mineral residuals. The shortcomings of the extraction methods are also discussed. Next section summarizes the preparation and application of chitin and its derivatives-based hydrogels. Overall, we hope this mini-review can provide a practical reference for selecting chitin extraction methods from seafood and applying chitin and its derivatives-based hydrogels.

KEYWORDS

Chitin extraction; Seafood waste; Hydrogels

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