利用生物法製備幾丁質

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摘要

幾丁質(chitin)為世界上含量最多的含氮多醣，主要存在於節肢動物、甲殼類動物(蝦、蟹等)、昆蟲等的外骨骼和真菌、藻類細胞壁中，幾丁質和其衍生物幾丁聚醣(chitosan)，因具有生物相容性、生物降解性和無毒性等特性，而被廣泛的應用於產業中。傳統製備幾丁質的方法，乃利用強酸、強鹼分別進行脫礦物質及脫蛋白質，具有好的生產效率及純度，但會造成環境危害以及聚合度的下降。本研究為利用友善環境以及綠色製程方法，先經由氣爆膨發或冷凍解凍循環處理，使原料產生多孔性結構，再以微生物發酵去除蝦殼的礦物質(主要為碳酸鈣)和蛋白質，製備出幾丁質。結果顯示經氣爆膨發後的蝦殼，其孔徑為 1.22±0.24 μm，而冷凍解凍後的蝦殼孔徑為 0.63±0.14 μm，皆大於未經處理蝦殼的 0.47±0.14 μm。而後經由三株產酸菌，分別為 *Lactobacillus acidophilus* BCRC 10695、*Lactobacillus plantarum* BCRC 10069、*Lactobacillus helveticus* BCRC 14026 進行微生物發酵，結果顯示在發酵 4 天後，*L. plantarum* BCRC 10069 其脫礦物質率(DM)為最高 92.2%，*L. helveticus* BCRC 14026 脫礦物質率(DM)為 84.8%，*L. acidophilus* BCRC 10695 DM 為 69.0%，其中又以 *L. plantarum* BCRC 10069 在 37°C、180 rpm 環境下發酵蝦殼 4 天的條件為最佳。

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