利用酵素法水解蝦蟹殼中蛋白質

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摘要

蛋白酶為全世界最常用的酵素，可用於消除甲殼動物外殼中的蛋白質，使副產品在各種工業領域和商業產品中具有廣泛的價值。本篇目的為探討蛋白酶水解蝦蟹殼中蛋白質的最適條件，及其水解物的物化性質和組成分。使用*Portunus segnis*內臟的鹼性蛋白酶、11種商業蛋白酶及白蝦體內酵素自我消化作用(Autolysis)以水解蝦蟹殼中的蛋白質，並觀察pH值、溫度對酵素活性及穩定性的影響，進一步探討蛋白質水解物的胺基酸組成、分子量、特定官能基含量等。結果顯示*P. segnis*內臟的鹼性蛋白酶最適活性條件為60 ℃下以pH 8.0作用3小時；11種酸性蛋白酶中，以Acid stable protease (ASP)在50 ℃下、pH 4.0培養6小時的蛋白質去除效率最佳；胰蛋白酶的自我消化作用則是在40 ℃下、pH 8.0作用2小時具最佳活性。所得的蛋白質水解物含高量必需胺基酸，具抗氧化能力，水解後胜肽鏈分子量皆小於1000 Da；而水解物的組成隨氧化作用時間增長造成氫硫基轉變為雙硫鍵、蛋白質羰基形成或因其他酵素及高溫作用，導致可溶性胜肽含量下降。綜合以上結果可得最佳蝦蟹殼蛋白酶水解條件，產生小分子量的水解產物，並且依產物的胺基酸組成不同，而具不同營養價值及抗氧化性，因此在商業大量製備上具有可發展的潛力。

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