

# 1 超音波與高靜水壓輔助胃蛋白酶萃取海鱷魚皮中第一型膠原蛋白

## 2 之製程建立

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- 6 1. 前言
- 7 2. 溫度、酸溶劑及短時間高壓處理對海鱷魚皮中膠原蛋白之萃取率與熱穩定性的影響
- 8 (1) 海鱷魚皮之一般成分分析
- 9 (2) 常壓萃取條件的優化
- 10 (3) 最適高壓條件的篩選
- 11 3. 結論
- 12

### 13 摘要

14 本研究目的為篩選膠原蛋白的萃取溫度與酸溶劑種類，並結合超音波 (Ultrasound, US) 與高靜水壓 (High hydrostatic pressure, HHP) 兩種加工技術輔助酵素水解以萃取海鱷 (*Rachycentron canadum*) 魚皮中的第一型膠原蛋白，再透過切向流過濾 (Tangential flow filtration) 與電透析 (Electrodialysis) 等不同透析方式探討其脫鹽效率與其對膠原蛋白產製率的影響。目前研究結果顯示，海鱷魚皮以含有胃蛋白酶之 0.5 M 醋酸於 30°C (AC-30) 與 35°C (AC-35) 下常壓水解 24 hr，AC-30 相較於 AC-35，其膠原蛋白濃度由 240.82 降低至 120.31  $\mu\text{g}/\text{mL}$ ，另以 0.5 M 乳酸 (LC-30) 取代 0.5 M 醋酸 (AC-30) 做為萃取溶劑於常壓下水解 24 hr，其產率分別為 0.95% 與 0.98%，兩組別間無顯著差異。在高靜水壓之壓力 (100-300 MPa) 與時間 (5-15 分鐘) 條件的篩選中，先以 100、23 200 及 300 MPa 處理 5 分鐘再常壓水解至 24 hr，結果顯示 100 MPa 的組別 (HHP-P100) 具有最高的膠原蛋白濃度為 331.08  $\mu\text{g}/\text{mL}$ 。將海鱷魚皮於 100 MPa 下處理 5、25 10 及 15 分鐘再常壓水解至 24 hr，結果顯示 10 分鐘 (HHP-T10) 為最適高壓萃取條件，相較於常壓控制組 (LC-30)，其膠原蛋白濃度與產率分別由 257.23  $\mu\text{g}/\text{mL}$  提升至 27 351.59  $\mu\text{g}/\text{mL}$  與 0.95% 提高至 1.31%。

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