

1 脈衝電場技術對臺灣文蛤 (*Meretrix taiwanica*) 的冷凍速度及物化性質之影響

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5 一、前言

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10 摘要

11 我國養殖之臺灣文蛤 (*Meretrix taiwanica*) 因在產銷環節上存在舊有內外因素，
12 導致生產鏈競爭力下降，為解決此問題，應創造具市場適切性之加工品以拓展國外市
13 場。參考自越南外銷文蛤的模式，評估冷凍加工方式有望為我國文蛤產業另闢新市
14 場，然而因國際運銷儲存時間較長，期望能以進階冷凍技術來維持文蛤品質。在現今
15 開發出的新興食品加工技術中，有研究指出當導入脈衝電場 (pulsed electric field, PEF)
16 至食品冷凍加工過程，可有效地提升食品在凍融後的品質，故本研究擬以 PEF 輔助冷
17 凍技術應用於臺灣養殖文蛤，評估其冷凍速度及後續品質特性。實驗結果顯示，在強
18 度 2.5 kV/cm 及 3.5 kV/cm 的 PEF 輔助冷凍下，相較於未施加 PEF 的控制組，經過相變
19 階段 (phase-transformation stage) 所花費的時間較短，有利於形成較小的冰晶，降低組
20 織被破壞的程度；烹煮損失率 (cooking loss) 和硫代巴比妥酸價 (thiobarbituric acid value,
21 TBA value) 的分析中也呈現相似的結果，部分條件的 PEF 輔助處理下能減少烹煮後自
22 文蛤流失的液體和可溶性物質，TBA value 則由 0.143 mg/kg 降至 0.126 mg/kg，成功降
23 低冷凍所造成脂質氧化程度。在質地及外觀顏色方面，PEF 處理後的文蛤大多與控制
24 組間並無顯著差異。總體而言，本研究顯示出 PEF 在冷凍方面上良好的應用性，未來
25 在開發工業級 PEF 輔助冷凍技術上期望能搭配效能較佳的冷凍設備，為後續解決冷凍
26 臺灣文蛤的品質劣化問題提供新的加工方式。

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