

1 高壓熱處理和白醋對白帶魚魚骨軟化及其理化特性之影響

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5 一、前言

6 二、高壓加熱對白帶魚 (*Trichiurus lepturus*) 脊椎骨硬度之影響

7 三、白醋濃度對白帶魚脊椎骨硬度及魚肉 pH 值和可滴定酸度之影響

8 四、白帶魚魚骨之微觀結構與應用

9 五、結論

10 摘要

11 全球水產產量逐年上升，2020 年人均消費量為 20.2 kg，穩定的成長讓水產加工
12 工多元化發展，然而，魚類經分級加工後會產生大量副產物，提升副產物價值並減少對
13 環境的影響是一大挑戰。這些副產物富含營養價值，其中魚骨是礦物質 (鈣、鈉、鉀、
14 磷和鐵) 的良好來源，透過白醋搭配高溫高壓熱處理可快速降低魚骨硬度，獲取鈣質及
15 其它營養素。因此，本研究將探討壓力、白醋濃度和加熱時間對白帶魚魚骨及魚肉理化
16 特性之影響，做為開發帶骨魚產加工品的基礎。研究結果顯示經不同壓力 (40、50、60、
17 70 kPa) 和時間 (20、40、60、80 min) 加熱後的魚骨硬度顯著下降，且壓力越大、加熱
18 時間越長，硬度越低，此外，不同白醋濃度 (5、10、15、20%) 在 70 kPa 下高壓加熱亦
19 可達到相同的軟化效果。由於魚骨是膠原蛋白和礦物質交錯排列而成，壓力和醋酸可破
20 壞分子間的鍵結，從魚骨微觀結構，可觀察到白醋處理後的魚骨結構破碎。然為避免白
21 醋影響魚肉風味，測定魚肉 pH 值和可滴定酸度，結果顯示白醋濃度越高，魚肉的 pH
22 值越低、可滴定酸度越高，再透過感官品評評估白醋處理後魚肉的喜好度，說明低濃度
23 白醋搭配高壓熱處理可有效降低魚骨硬度，且風味為受試者可接受。綜上述結果，藉由
24 壓力、溫度和醋酸搭配可有效降低魚骨硬度，而一般成分及鈣和磷含量需進一步再做分
25 析。除此之外，為了開發其它產品的可行性還需進行更詳盡的感官品評分析。

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