探討魚明膠最適製膜之熱處理條件及不同添加物對於魚明膠可食膜物理特性之影響

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二、探討製備鱒魚皮明膠可食膜之最適加熱條件及甘油濃度
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摘要

魚皮萃取之明膠 (gelatin) 研究，對於印度教及佛教區域之猶太、清真食品發展有益，另一方面可以解決加工漁業副產品的浪費，包覆可食膜於食品表面，讓食物免於乾燥、光照射及氧氣滲透等，因此，將探討魚明膠最適製膜之熱處理條件及不同添加物對於魚明膠可食膜物理特性之影響。將探討鱒魚 (trout) 皮萃取之明膠溶液，於不同熱處理條件及甘油濃度下最適製膜條件。將含有 6.8% 明膠之溶液分別添加 9、17 及 23% 甘油並搭配不同溫度(80、 90 及 100°C)與時間(30、45 及 60 分鐘)進行加熱以製成製膜溶液，並探討相關物化特性。結果顯示加熱時間增加會使可食膜溶解性降低，其顯示於 90°C 加熱 30 分鐘為最適製膜條件，利用此條件進行後續測試後發現，當甘油濃度增加時，膜強度降低、隔濕性下降，但拉伸能力上升。而以不同比例之魚明膠及幾丁聚醣 (chitosan) (100:0、80:20、70:30、60:40 及 0:100) 混合製成可食膜，並檢測其物理及功能特性。結果表示，隨幾丁聚醣濃度的增加，膜的拉伸能力及彈性也隨之增加，但膜的斷裂伸長率、水蒸氣滲透率及明膠膜之水溶性則降低，其中又以 60:40 之組別效果最好。另外，在鱒魚皮萃取明膠膜中添加沒食子兒茶素沒食子酸酯 (epigallocatechin gallate, EGCG) (50 and 250 ppm) 及綠茶粉 (1% 及 20%) 後，觀察可食膜之物理特性及應用於魚肝油之抗氧化結果，其顯示於綠茶粉之組別能有效保留抗氧化活性，此外，在魚肝油應用部分，控制組及添加抗氧化劑組別在硫代巴比妥酸反應物 (thiobarbituric acid reactive substances, TBARS) 及過氧化價 (peroxide value, PV) 上，皆能保持在最低數值。由各實驗結果可知以適當條件及添加物可以提升魚明膠可食膜之物化特性及機械性能，以利發展魚明膠可食膜並降低漁業加工之廢棄物的產生。

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