不同來源生物可降解聚合物/花青素複合智慧型膜之製備與應用

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108/10/23

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摘要

對 pH 敏感性之智慧型包裝可以反應出食品包裝環境變化，提供食品訊息給消費者。花青素是天然無毒水溶性色素，可以在廣範圍的 pH 值變化下顯示出顏色變化，為良好 pH 指示劑。可檢測食物變質導致的 pH 值變化。做為基底的生物可降解聚合物用來固定 pH 指示劑，然而單一的材料會曝露出此材料的缺點，因此本研究目的為將花青素與不同生物可降解聚合物結合製成 pH 敏感性膜，再比較其機械性質、顏色變化及實際應用。首先分別將澱粉、聚乙烯醇(PVA)及幾丁聚醣倆倆結合與洛神花花青素製備成薄膜；將洋菜及馬鈴薯澱粉與紫心甘藷花青素製備成薄膜；以及將塔拉膠結合纖維素再與葡萄皮花青素製備成薄膜。發現花青素的添加均會影響基底薄膜的結構，能使 PCR 及 SPR 膜有良好排列，也能使 SCR 結構不均勻，含量多寡也會影響到結構。而複合膜在不同 pH 值下也顯示出明顯不同顏色變化。對於豬肉及牛奶變質試驗，在腐敗點也能展現出明顯顏色變化，表示複合膜可以應用於食品新鮮度快速檢測的簡單方法。

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