探討紫心地瓜花青素的穩定性

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一、前言
二、紫心地瓜花青素的醯化結構特性
三、加工和保存條件對紫心地瓜花青素穩定性的影響
四、以生物聚合物提升紫心地瓜花青素穩定性
五、結論

摘要

花青素是一種天然且生物可降解的植物來源水溶性色素，由於其化學結構的改變，在酸鹼作用下可呈現不同的顏色變化，具有作為天然染劑的潛力。紫心地瓜具有高花青素含量，其化學結構主要為芍藥素和矢車菊素以單醯和二醯化的形式組成。由於其醯化形式比例高，紫心地瓜花青素具有相對較高的穩定性。然而，食品加工中的熱處理和長時間儲存，會導致花青素降解，並使其顏色發生改變。因此，目前已有研究利用添加生物聚合物的方式，保護花青素，避免受到外在條件的破壞。本次報告將探討加工與儲存條件對紫心地瓜花青素穩定性的影響，及提升其穩定性的方法。結果顯示，在較低 pH 值時，花青素的降解率較低，且顏色變化較不明顯，結構較為穩定；在避光和低溫的條件下，花青素穩定性佳、顏色變化小。在紫心地瓜花青素的組成化合物分析中，發現含有具氧化還原活性的咖啡醯殘基之化合物，其降解和顏色損失的程度會較無此物質之化合物大，使該類型花青素化合物穩定性降低。藉由添加乳清蛋白、大豆蛋白和 β-環糊精三種生物聚合物，分別以鍵結(蛋白質)和形成包埋物(inclusion complexes) (β-環糊精)的方式固定花青素，降低其受外在條件破壞。結果顯示，添加 25 mg/L 大豆蛋白與 2500 mg/L β-環糊精的兩種組合，分別能讓花青素在加熱處理和長時間儲存條件下有最低的花青素降解率和最小程度的顏色變化。

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