

以不同萃取方法萃取甜菊葉中的甜菊糖苷

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摘要

甜葉菊 (*Stevia rebaudiana*)，又稱為甜菊，含有超過 30 種甜菊糖苷 (steviol glycosides, SGs) 的混合物，累積在甜菊中，其主要 SGs 有甜菊苷 (stevioside, STV) 和瑞鮑迪苷 A (rebaudioside A, RA)，而其他次要 SGs 含量較少。STV 和 RA 的甜度是蔗糖的 250-300 倍。SGs 具有熱穩定性、pH 穩定性，並且不會發酵的天然甜味劑。此外，甜菊產品被認為是健康的天然食品，在國際市場上受到關注，其具有抗氧化、抗高血糖、抗高血壓、抗病毒、抗菌、免疫調節和抗腫瘤等治療特性。本研究使用三種不同方法為加壓液體萃取 (pressurized liquid extraction, PLE)、加壓熱水萃取 (pressurized hot water extraction, PHWE) 和微波輔助亞臨界水萃取 (microwave-assisted subcritical water extraction, MSWE)。這些方法是一種綠色環保、環境友好、可減少溶劑使用並可以提高 SGs 的萃取率。第一個方法 PLE，以高溫 and 壓力改變溶劑的物化性質，主要可以萃取出更多總酚含量 (total phenolic content, TPC) 和抗氧化活性 (antioxidant activity, AA)。結果顯示，在 100 °C 溫度下使用 15 mL g⁻¹ 的 70% 乙醇萃取 30 分鐘，其 RA、瑞鮑迪苷 C (rebaudioside C, RC) 和 STV 萃取率分別為 13.11、3.97 和 9.5 g/100 g，而活性化合物，如，TPC 和 AA 的產率分別為 299.72 mg GAE g⁻¹ 和 11.09 mmol g⁻¹。接著，PHWE 使用相對較低的壓力下進行萃取，可以觀察在 120 °C 和 5 個大氣壓下，使用 40 mL 水處理 1 mg 磨碎的葉子，可實現最大產率為 7.5%。最後，MSWE 利用快速微波加熱創造亞臨界水條件，在溫度 140 °C 和 2.6 bar 壓力下以水萃取保持 1 分鐘可從葉子中萃取出 RA、STV 和 RC，其萃取率分別為 9.7%、4.2% 和 1.3%。總結以上，MSWE 萃取時間更短、更溫和的操作條件和更低的運營成本。

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