

發酵蔬果飲品之製備及其機能性評估

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摘要

蔬果具有很強的抗氧化能力，因追求栽培、收穫、保存等方式之有效性，導致抗氧化成分降低。1998年起因酵素機能性之倡議，使坊間酵素飲料商品興起，但目前國內對於酵素飲料製程與酵素活性檢測尚無明確公認方法。傳統酵素液製品製備至成品完成相當費時，而發酵期間變異多，不易控制。本研究以多種蔬果為材料開發一種簡單快速具高酵素活性與抗氧化活性之酵素飲料製作方法，期待降低酵素液發酵時所產生之變異及生產成本、適合工廠大量生產、明確定義酵素活性檢測項目與方法，所得結果如下：1. 原料蔬果汁具有相當酵素活性(SOD-like 為10.1 U/ml)與抗氧化活性。2. 將蔬果汁分別接種酵母菌、醋酸菌與乳酸菌所待發酵液之酵素活性及抗氧化活性，均較原料蔬果汁為高，SOD-like 活性增加 20 U/ml 以上，以醋酸發酵液最高為49.6 U/ml，抗氧化活性則以酵母發酵液最佳，尤以螯合亞鐵能力最佳，增加 0.21 mg/ml。3. 將蔬果汁同時接種酵母菌、醋酸菌與乳酸菌，行三菌混合發酵，結果以1:2:1 所得結果為佳，SOD-like 活性提高 28.3 U/ml，1:1:1 則為 19.6 U/ml，任一混菌皆增強原料之抗氧化能力，除螯合亞鐵能力；唯混合發酵液之酵素活性及抗氧化活性均低於單菌發酵者，混菌發酵SOD-like 活性最高為 40.01 U/ml，醋酸發酵則為59.20 U/ml，在螯合亞鐵能力上，混菌發酵下降 0.27 mg/ml，三種發酵除乳酸菌皆為上升。4. 研製酵素飲品之高於若干市售商品，尤以螯合亞鐵能力為佳，高於市售 0.01-0.03 mg/ml，另本產品之製程僅需 14 日即告完成，遠短於市售商品標榜之1-3 年發酵。5. 本研究製造之酵素液不需高昂投資及高級設備與技術，發酵時間短，可解決變異多與不易控制等問題。另所用之活性指標與檢測方法，可作為商品品質判定之指標。

關鍵詞：酵素飲料、抗氧化活性、酵素活性、蔬果汁、發酵

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