

摘要

餐包製品常見於在市面上，尤其被速食業者廣範應用，如：漢堡餐包、潛艇堡與三明治等。國外對酸麵糰製作土司及麵包研究較多，鮮少著重在不同酵母源對餐包品質質地影響。故本研究旨在探討以不同酵母來源製作餐包，比較其質地品質之差異。分別採用市售乾酵母、新鮮酵母及以小麥均質培養成酸麵糰為試驗材料，再將三者以不同混合搭配並依標準製程製作餐包。以快速黏度測定儀 (RVA)、麵糰攪拌分析儀、麵糰拉伸分析儀分析麵粉的物化特性並測定麵糰之 pH 值、總滴定酸、乳酸菌與酵母菌、色澤。以質地測定儀測定發麵燒餅之體積、比容積、質地、官能品評，再比較餐包質地與整體接受性。研究結果顯示，餐包基本成分方面，以添加酸麵糰具有保濕特性且以添加酸麵糰 1%：乾酵母 1% 發酵 40 分鐘所佔的水分為最高。酸麵糰分析方面，由 pH 與 TTA 得知，pH 會因培養天數增加而下降，TTA 會因 pH 下降而增加，酵母菌與乳酸菌會因不同培養時間及水質不同而改變，尤以 RO 水培養最適合，其乳酸菌數為 $10^{5.6}$ cfu/g、酵母菌 $10^{5.3}$ cfu/g。麵粉物性測定方面，快速黏度測定儀測定結果得知麵粉的成糊溫度 (pasting temperature; T) 62.33°C ；糊化尖峰溫度 (peak viscosity; P) 147.94 RVU；支撐強度 (holding strength; H) 81.75 RVU；破裂黏度 (break down; BD) 66.19 RVU；最終黏度 (final viscosity; F) 179.77 RVU；回升黏度 (set back; SB) 為 98.02 RVU。麵糊 α -amylase 酵素活性分析方面，中筋麵粉沉降係數為 433.83(秒)。麵糰物性由 Farinograph 測定結果得知，麵粉最適吸水量 (WA) 62.37%，頂點時間 (PT) 16.17min、離線時間 (DT) 44.17min、穩定性 (ST) 37.13min 及耐攪拌指數 (M.T.I.) -6BU。Extensograph 測定結果為麵糰隨著醒麵時間增加，醒麵能力會隨之下降。餐包質地與貯藏性方面，同等製作條件下，隨著酸麵糰比例增加其餐包硬度與咀嚼度會隨之升高，但體積與比容積下降。色澤方面，pH 值降低產品亮度 (L 值) 與白度 (WI) 上升。搭配適量乾酵母以代替體積膨發來源並延長發酵至 40 分鐘，其體積、香味與質地優於控制組 (D2)，推測添加適量酸麵糰與乾酵母能加強芳香味、保濕與使質地變得柔軟，進而延長貯存時間。餐包外觀與官能評估方面，隨著酸麵糰量增加，酸香味也隨之增加，會影響產品外觀及顏色。因此搭配適當乾酵母以代替體積膨發來源在延長發酵至 40 分鐘，其香味、咀嚼感與整體接受性顯著優於控制組 (D2)。

關鍵字：餐包、酸麵糰、質地、色澤、保鮮度

Abstract

Bun is widely popular in the market, especially widely used in fast food stores, for example hamburger, submarine sandwich and sandwiches. Most of the foreign researchers focus on bread making using sourdough but rarely pay attention to effect of different yeast sources on the quality of bun texture. The purpose of this research was to evaluate the difference in texture of buns using variable fermentation sources including dry yeast, fresh yeast and wheat sourdough. These three sources were mixed in variable percentage and applied to bun following the standard hand-made process. We use Rapid Viscosity Analyzer (RVA), Farinograph, Extensograph to analyze the physical characteristics of hand-made buns and determine their pH value, total titratable acidity (TTA), color, colonies of *Lactbacillus* and yeast. In addition, texture, and sensory evaluation of the unique texture and overall acceptability were also compared among various Buns. Our results indicated that sourdough had moisturizing properties and mixture of 1% of sourdough solution and 1 % of dry yeast cultured for 40 minutes retained the highest moisture. Sourdough analysis indicated pH of sourdough gradually decreased when incubated more days long, At the same time, TTA increased with decreased pH value. Yeast and *Lactobacillus* varied according to different incubation time and water quality. We obtained the optimal yield of *Lactobacillus* number $10^{5.6}$ (cfu/g), yeast $10^{5.3}$ (cfu/g) when using RO water-containing solution. Rapid viscosity analysis showed that all-purpose flour gelatinized at (pasting temperature; T) 62.33°C; gelatinization peak (peak viscosity; P) 147.94 RVU; holding strength (holding strength; H) 81.75 RVU; breakdown viscosity (break down; BD) 66.19 RVU; final viscosity (final viscosity; F) 179.77 RVU; rebound viscosity (set back; SB) for the 98.02 RVU. Assay of the α -amylase of all-purpose wheat flour revealed falling number of 433.83 sec. Farinograph revealed rheological properties of all-purpose wheat flour: the most suitable water absorption (WA) 62.37%, extended time (PT) 16.17min, off-time (DT) 44.17min, stability (ST) 37.13min and elastic modulus (MTI) -6BU. Extensograph disclosed that the dough proofing decreased in capacity as the proofing time passed. In terms of texture and storage durability of bun, hardness and chewing increased as the proportion of acid liquid dough increase, but the volume of buns and their specific volume decrease. As to the color, product brightness (L value) and whiteness (WI) increased when pH reduces. Combined use of sourdough and dry yeast to enrich the fermentation source and prolonging fermentation time up to 40 minutes, its volume, flavor and texture were

better than the control group (D2). Combined use of sourdough liquid and dry yeast can enhance aroma, texture, moisture, softness, and extend the storage time. Appearance and sensory assessment of bun revealed that the flavor, appearance and color of buns were enhanced by adding optimal amount of sourdough liquid. Therefore, we suggested that the flavor, chewing and overall acceptance were significantly enhanced when mixture of sourdough and dry yeast were fermented up to 40 minutes.

Key words : Bun, Sourdough, Texture, Color, Staling.

