

國立屏東科技大學食品科學系博士班

題目：應用田口方法於酸麵團麵包製作

研究生專題討論書面報告

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## Using Taguchi Method for Making Sourdough Bread

### 摘要

田口品質工程不僅能同時處理多變因及水準的一種實驗計畫方法，且能以較少的實驗組合與較低的成本與時間進行實驗，取得最佳化的產品品質，現已廣泛應用於工業界，被視為一種有效率開發新產品及改良製程的品質工程技術。田口方法現應用於食品烘焙，以開發兼顧消費者口味與健康之烘焙食品。添加酸麵糰於烘焙產品中，經酵母菌與乳酸菌的共同發酵產生了特殊的風味與提升營養價值、增加麵糰結構的細緻度、延緩產品品質老化和增加保存期限等。本研究以穀研所開發之山型吐司麵包製作配方為基準，再依據二十位麵包師傅針對配方問卷分析選出製作配方最佳之五種因子，分別為糖、水、鹽、油與麵粉（添加酸麵糰 30%），以進行田口實驗設計來製作天然酵母吐司，並結合官能品評來計算其 S/N 比值。研究結果顯示，以 45% R.O.水、1.4%鹽、日本高筋麵粉與添加 30% 酸麵糰、8%砂糖、12%無鹽奶油、4%牛奶、1.5%酵母所製作的天然酵母吐司產品有較高整體接受性，讓烘焙食品兼具健康與獨特風味品質。

關鍵字：田口方法、烘焙食品、S/N 比值、天然酵母麵包

Keywords: Taguchi method, bakery foods, S/N ratio, sourdough bread

### Abstract

The Taguchi method, a systematic approach of analysis of experiments, is used for the purpose of designing and improving product quality. It is not only to evaluate several process factors at a time with small scale experimental runs, but also to optimize the process for producing high quality products at a lower development cost and time. Taguchi method is applied to produce high quality sourdough bread, though fermentation of yeast and lactobacillus together, which has features on delaying aging, longer shelf life and meeting consumers' needs in both unique taste and nutrition. Based on a bread receipt developed by China Grain Products Research & Development Institute together with questionnaire analysis collected from 20 bakers, five manufacturing factors, sugar, water, salt, oil and flour with 30% sourdough, were chosen. The experimental design then can be employed to make sourdough bread associated with sensory evaluation and S/N ratio. The results showed that to obtain sourdough bread with total acceptance and good quality in terms of unique taste and nutrition, the optimal conditions are of 45% R.O water, 1.4 % salt, Japan bread flour with 30% sourdough, 8% sugar, 12% non-salt butter, 4% milk and 1.5% yeast.

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