Effects of enzymatic treatment using response surface methodology on the quality of bread flour

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Effects of enzymatic treatment using response surface methodology on the quality of bread flour

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Abstract:

Flour with low α-amylase activity needs to be supplemented with additional α –amylase, but α –amylase added to weak flour can lead to decreased quality of the dough. The objective of this study, was to evaluate the effects of glucose oxidase (1-5 g/100g flour) and xylanase (1-3 g/ 100g flour) on the quality of bread flour after optimization by additions of α–amylase. The effects of enzyme additions on dough properties and bread quality parameters such as specific volume, shape, texture and sensory attributes were determined by Response Surface Methodology (RSM) using a central composite design. Results of RSM modeling showed that glucose oxidase and xylanase improved the quality of bread and dough but effects were dose dependent. In this work, the optimal dose of glucose oxidase and xylanase were (30and20) ppm, respectively.

Keywords:

Wheat flour, α-amylase, Glucose oxidase, Xylanase, Response Surface Methodology

1. Introduction

Bread is the product of baking a mixture of flour, water, salt, yeast and other ingredients (Whitehurst & Oort, 2010). An optimum bread making processes is one