

# Effects of Oxidizing Agents and Flour Type on the Loaf Volume of Toast

許家愷、張基郁

E-mail: 9511219@mail.dyu.edu.tw

## ABSTRACT

The wheat flours (A, B and C) milled from single wheat variety, hard red spring wheat in U.S.A, and collected by the extraction rates (71, 69 and 64%) and referring the ash content were used as material in this study. Firstly, three oxidizing agents, ascorbic acid, azodicarbonamide and glucose oxidase, were selected and added by four dosages (25,50,100 and 200 mg/kg) to the flour sample with high extraction rate (Flour A). The dough rheological properties of Flour A, including Farinographic and Extensographic properties and the loaf volume of toast made from Flour A were tested to determine the optimum oxidizing agent and its dosage. Then, the flours with medium and low extraction rates (Flour B and C) were added with the optimum oxidizing agent and by the optimum dosage, and their dough rheological properties and loaf volumes of toasts were tested. This study is expected to be helpful to raise the utilization of the flour with high extraction rate and to be as references for baking industry. In the results of proximate compositions and dough rheological properties analyses of the flour samples, crude protein and ash contents increased as the extraction rate increased; the water absorption, mix tolerance index, and arrival time of dough Farinographic properties also increased as the extraction rate increased, however the peak time, departure time, stability, and valorimeter value decreased as the extraction rate increased; the extensibility of the dough Extensographic properties increased as the extraction rate increased, and the resistance and area of the Extensographic properties decreased as the extraction rate increased. In the results of optimum oxidizing agent and dosage analysis, it is found that the loaf volume of toast made from the flour added with 100 mg/kg glucose oxidase was the largest. The peak time, departure time, stability and valorimeter value of dough Farinographic properties increased as the glucose oxidase was added, which was found more obviously in the flour sample with high extraction rate. The resistance of dough Extensographic properties also increased as the glucose oxidase was added, but the extensibility decreased as the glucose oxidase was added. The loaf volume of toast also increased apparently as the glucose oxidase was added. In summary, optimum dosage of glucose oxidase can obviously improve the stability of dough rheological properties of the flour of high extraction rate, and increase the loaf volume and acceptability of the toast made from the flour of high extraction rate.

Keywords : Dough rheological properties ; Loaf volume of toast ; Oxidizing agent ; Toast ; Wheat flour

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