OPTIMIZATION OF ENZYME LEVEL FOR BREAD FLOUR

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ABSTRACT

The aim of this study was determined the optimum levels of enzymes (amylase, glucose oxidase, lipase, xylanase) for bakers flour which is contained hard and medium wheat flour in chosen proportions. In order to have general over view of enzyme effect on wheat flour, enzymes were chosen in different concentration levels (low, medium, high) and supplemented with flour. The effect of different enzymes on flour gluten quality, gluten amount, gluten index, dough rheology, water absorption, falling number and final quality of bread was investigated with control. The effect of enzymes on gluten quality, amount and index were evaluated by concerning amount of wet and dry gluten. Water absorption, stability, development time, was analyzed using farinograph test. Dough rheology (extensibility, resistance) was analyzed using extensograph.

It was found that water absorption and development time of wheat flour was decreased when adding amylase enzyme and water absorption was increased with xylanase, glucose-oxidase. Development time was increased with glucose-oxidase concentration. According to farinograph stability of wheat flour was increased with glucose oxidase and decreased with amylase. Extensibility of wheat flour was decreased with glucose oxidase and increased with amylase, lipase and xylanase. Also it was observed flour with enzymes was shown no significant difference on gluten quality and amount and it was observed with amylase and xylanase enzymes were reduced the falling number on wheat flour.

To find optimum levels of enzymes for hard and medium flour blend, flour was treated with four enzyme combinations in recommended dosage levels. Enzyme combinations activity was evaluated by the measurement of loaf volume and in addition to that sensory analysis was done for evaluate bread quality with reference.

Enzymes had positive effect on wheat flour by dough strengthening, conditioning dough rheology and water absorption. Regarding the effect on final baked product, enzymes improve the quality of bread by improving volume and other sensory characteristics (overall appearance, crust colour. symmetry of form, texture, grains, mouth feel, and overall acceptability.).Except treatment1 all other enzyme treatments were shown no significant difference from the reference. So that according comparison cost of treatments it was found that amylase 6 ppm (mg/kg), glucose-oxidase 15 ppm (mg/kg), lipase 25 ppm (mg/kg) and xylanase 40 ppm (mg/kg) combination was the cheapest and best enzyme treatment for hard and medium flour blend.

Key Words: Wheat flour, Enzymes, dough rheology, water absorption, bread flour