

CONTRIBUTION CONCERNING THE INFLUENCE OF THE ADDITIONS OF THE GERMS OF BARLEY TO THE DOUGH'S QUALITIES

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Abstract

The research program are permitted the obtaining of bakery products with addition of germs and the conclusions with the complex effect which these have to the rheological and qualitative proprieties of dough and the terminal products. The addition of germs of barley permits the realization of poor dietetic products in the gluten restrictively about the germs of employable barley for a sector of population with insufficiency in the assimilation of gluten.

Keywords: *germs of barley, dietetic products, panification.*

Introduction

The germ of barley are a reduced utilization in industry of panification but can found an extended utilization in the process of dietetic product with an appreciable content of fiber and decreases produced of protean tip gluten, report the total albuminoid from the system of panification. Chemical component of the germs of barley can variable in qualitative and quantitative limit, but an compositional example can be appreciate in: 74-75%glucides; protean substance 9.5-10%; raw fat 1.4%; mineral substances 1.5% and an amilolitical activity in the variable condition, between 200-300 mg maltose for 100g produced.

Experimental

The experimental program used a program conceived in the rotator center system with two independent variables for the result of the dough with four free variables and 31 experience, with regarding the realization in first stage dough's form by wheat flour tip 680, NaCl 1.25%, yeast 5%, germs of barley 5-7%, water 50 ml/ 100 g blend, duration of kneading 10 minute.

At the optimum chose value of the free parameters Xi was tried an the limitation additions of germs of barley, report to the wheat flour, keeping the

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equilibrium contents of gluten reportedly to the total protean content. The free variables, which form the technological variables, which could the influence in the fermentation process of the dough's, are show in the table 1.

Table1. Free variables that influence fermentation process

| Free variables | Codificated variables | | | | | |
|-------------------------|-----------------------|------|------|------|-------|------------|
| X_i | -1.678 | -1 | 0 | 1 | 1.678 | Δx |
| Real variables | | | | | | |
| Temperature, °C, X_1 | 30 | 35 | 40 | 45 | 50 | 5 |
| Duration, minute, X_2 | 31 | 33 | 35 | 37 | 39 | 2 |
| Germs of barley, X_3 | 3 | 5 | 7 | 9 | 11 | 2 |
| NaCl, % | 1 | 1.25 | 1.50 | 1.75 | 2 | 0.25 |

Results and Discussions

For appreciation of the results of research and the considered the simultaneous influences at the free variables considered the dominant it was selected process the way of graphic expression with a base of presentation by a regression equations from the general form:

$$Y = b_0 + b_i x_i + b_{ij} x_i x_j + b_{ii} x_i^2$$

The dependent variables, which express the process development of ferment and the dough quality, are:

- The acidity measured in degree of acidity;
- The development of dough's by settlement deformations to the final phase of process beside the initial state.

The influence of the conditions of work expressed in the research program in the free variables about the way of achieve to the dough's was expressed in the figures 1 and 2 for the degree of acidity and respectively 3 and 4, for the expression of the development to the dough's.

The acidity dough's has the maxim values in the minimum conditions to the addition at germs of barley.

In figure 2 is noticed a growth of acidity in a dough as the amount of germs of barley diminishes. The influence durations of the ferment process to the dough is less significant in the situation in which amount of germs of barley is maximum.

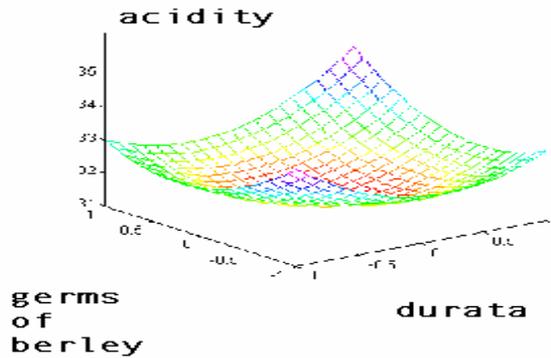


Fig. 1. The influence of germs of barley and duration to dough acidity

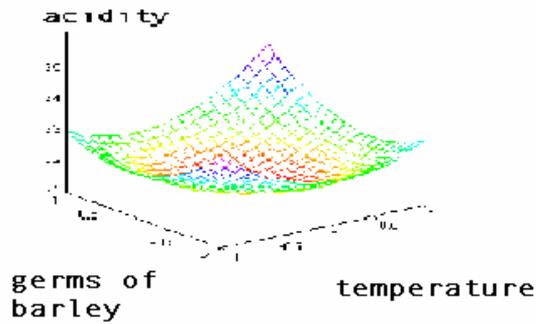


Fig. 2. The influence of germs of barley and temperature to dough acidity

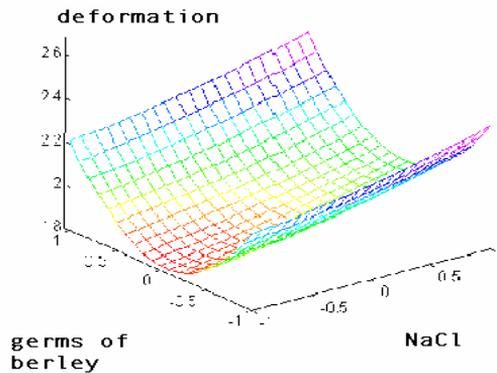


Fig. 3. The influence of germs of barley and NaCl quantity to dough deformation

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The amount of germs of barley for natural growth dough it was between 5-7%, and the temperature necessary and sufficient can be in limit of 30-35°C, to duration of 35 minute.

In figure 4 is noticed that the deformation dough's with addition of germs of barley is maximum when the amount of germs of barley is minimum. Duration process in this case doesn't have a big signification.

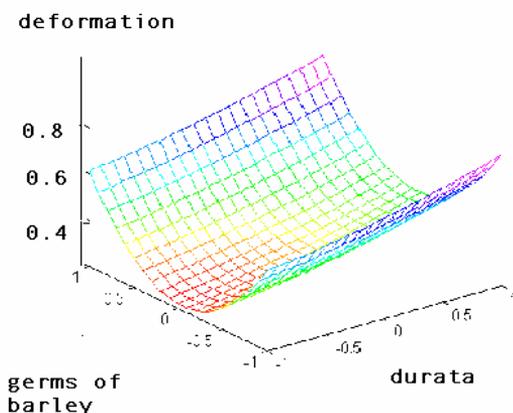


Fig. 4. The influence of germs of barley and duration to dough deformation

Conclusions

The negative influence of an amounts over the limit admitted of the germs of barley, is explained by the poor composition of gluten flour of barley. The program research emphasized are distinguish with the technological parameters can be used, in constant condition for bakery yeast of 3% and the durations of kneading of 10 minute, in the process of: the addition of the germs of barley 5-7%, temperature of the fermentation 35°C and duration of the fermentation of 35 minutes.

A maximum addition of 7% germs of barley can be considering a positive solution, with effect in the nutritional system and the feeding.

References

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