Tuxtamishev Sayitkul Saydullayevich, senior lecturer
Guliston State University Orcid: 0009-0007-5670-8744
e-mail: sayitqulbehruz.@mail.com

RESEARCH OF THE BAKERY SAFETY CHARACTERISTICS OF QUALITY BREAD FROM LOCAL WHEAT FLOUR MIXTURES

https://zenodo.org/records/18869415

Annotatsiya: The article shows that samples of grain grown in the Republic, affected by the turtle bug to varying degrees, were studied. It was revealed that the hot climate of grain growing affected changes in flour, the state of the carbohydrate-amylase complex and the weakened activity of amylolytic enzymes.

Key words: concept, beauty, linguistic worldview, image schema, conceptual metaphor, universality, cultural specificity, cognitive linguistics, evaluation, symbolism.

MAHALLIY BUG‘DOY UNI ARALASHMALARIDAN SIFATLI NONNING NONVOYXONA XAVFSIZLIGI XUSUSIYATLARINI TADQIQOT QILISH

Annotatsiya: Maqolada Respublikada yetishtirilgan, toshbaqa hasharoti turli darajada ta’sirlangan don namunalari o‘rganilganligi ko‘rsatilgan. G‘allachilikning issiq iqlimi un tarkibidagi o‘zgarishlarga, uglevod-amilaza kompleksining holatiga va amilolitik fermentlarning faolligining pasayishiga ta'sir qilishi aniqlandi.

Kalit so‘zlar: Subsorting, farqlash, yopishqoqlik, shakl barqarorligi, himoya, amilolitik, hujumga chidamlilik.

ИССЛЕДОВАНИЕ ХАРАКТЕРИСТИК БЕЗОПАСНОСТИ ХЛЕБА ИЗ МЕСТНОЙ ПШЕНИЧНОЙ МУКИ

Аннотация: В статье показано, что были изучены образцы зерна, выращенного в Республике и в различной степени пораженного клопом-черепашкой. Выявлено, что жаркий климат зернопроизводства повлиял на изменения в муке, состояние углеводно-амилазного комплекса и ослабление активности амилолитических ферментов.

Ключевые слова: субсортировка, дифференциация, липкость, стабильность формы, защита от проникновения, амилолитическая активность, уязвимость к атакам.

The baking quality of wheat flour is mainly determined by the following properties: gas-forming ability; the ability to form dough with certain rheological properties (flour strength).

Purpose and objectives of the research. The purpose of these studies is to study the effect of single-component bread improvers on its quality.

In accordance with the set goal, the main directions of research and experimental work were determined to solve the following problems:

- study of the baking properties of individual batches of grain cultivated in Uzbekistan;

- studying the quality of bread made from flour with reduced baking properties;

Objects of research: wheat flour with reduced baking properties, one-component baking improver - ascorbic acid, dough and bakery products made from flour with reduced baking properties.

Scientific novelty. Based on experimental studies and theoretical generalization and analysis of published literature data, the dosages and methods of using baking improvers of oxidative action in the processing of flour with reduced baking properties, weak gluten and reduced enzymatic activity are scientifically substantiated.

The results obtained and their analysis

The gas-forming ability of flour is of great technological importance in the production of bread, the recipe of which does not include the addition of sugar to the dough. It depends on the state of its carbohydrate-amylase complex, including carbohydrates, the activity of amylolytic enzymes and, in general, on the sugar-forming ability of flour.

During the fermentation process in the dough, as a result of the vital activity of yeast cells, ethyl alcohol and carbon dioxide are formed as the final products of carbohydrate fermentation, the amount of which is used to judge the intensity of alcoholic fermentation.

Gassing capacity is characterized by the amount of carbon dioxide (CO2) released over a specified period of time when dough is fermented from certain quantities of flour, water and yeast.

Knowing the gas-forming ability of the flour being processed, one can predict the intensity of fermentation of the dough from this flour, the course of proofing and baking, the intensity of the color of the crust, the looseness of the crumb and the volume of the bread. It is believed that when displacing from 1300 to 1600 ml of solution, flour has an average, and above 1600 ml, a high gas-forming ability.

The study determined the gas-forming ability of flour and its dependence on the falling number value (Figure 1).

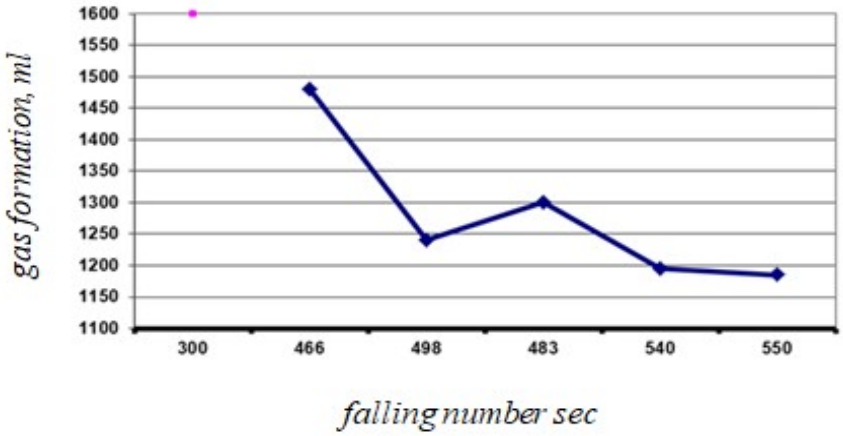

Figure 1. Gasforming ability of flour and its dependence on the falling number value

The data in Diagram 1 shows that the more the grain is affected by drying, the insufficient its gas-forming ability.

Thus, the gas-forming ability of flour (sample 1) at a falling number of 466 seconds was 1480 ml. With an increase in the falling number of flour (sample 2) by 32 seconds compared to flour (sample 1), the gas-forming ability decreased by 240 ml; in flour (sample 3), with an increase in the number, a drop of 17 seconds, the gas-forming ability decreased by 180 ml; in flour samples 4 and 5, where the falling number indicators increased against flour (sample 1) by 74 and 84 seconds, the gas formation rate decreased by 285 and 295 ml, respectively.

Thus, the study determined that flour samples (samples 1 and 3) have an average gas-forming ability, and flour (samples 2,4,5) have a low gas-forming ability.

During the baking process, partial gelatinization of starch is of great importance, causing the formation of an elastic crumb of bread

Next, we conducted a study of the state of starch and the temperature of its gelatinization (Table 1). The work was carried out on the device Amylograph.

These amylograms simultaneously reflect the degree of swelling of starch, the progress of its gelatinization and the action of amylolytic enzymes.

Table 1

The influence of the state of starch and its gelatinization temperature on the gas-forming ability of flour

Flour samples	Amylograph indicators	
	gelatinization temperature, °C	viscosity of starch paste, e.a
1	72	920
2	68	1100
3	68	1010
4	65	1230
5	62	1539

The shape of the amylogram is influenced by the action of amylolytic enzymes, which break down starch into dextrins, thereby reducing the viscosity of the flour mixture. It is believed that with good quality flour, the gelatinization temperature is 80-85 ° C and the viscosity of the starch paste is 400-600 e.a. With average flour quality, these indicators are 70-80 oC and 600-800 e.a.; and with poor quality - less than 70 oC and more than 800 e.a. respectively.

The flour quality groups were determined by the height of the amylograms.

The results of the Amylograph device (Table 1) show that in flour (sample 1) the gelatinization temperature was 72 ° C and it can be classified as flour of average quality, however, the height of the device showed that the viscosity of the starch paste was 920 .a. which confirms the weak activity of amylolytic enzymes.

All other flour samples (2,3,4,5) are characterized by gelatinization temperature and paste viscosity as flour with reduced enzymatic activity.

Thus, the study showed that flour samples have low activity of their own enzyme - alpha-amylase, which characteristic when processing grain grown in hot and dry weather.

The ability of flour to form a dough that has certain rheological properties after kneading and during fermentation and proofing is considered the “strength” of flour.

Conclusions. It was determined that grain samples grown in the republic were affected by the bug bug to varying degrees, which affected the protein-proteinase

complex of flour, which ensures the condition and change of protein substances of flour and the physical properties of the dough.

It was revealed that the hot climate of grain growing affected changes in flour, the state of the carbohydrate-amylase complex and reduced activity of amylolytic enzymes. As a result, during the dough preparation process, the attackability of protein substances in flour increased, the effect of enzymes on starch was weakened, there was a lack of sugars necessary for fermentation, the rheological properties of the dough deteriorated, and the quality of bread decreased.

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