EFFECTIVE METHODS OF STORAGE OF OAT FLOUR GROWN IN THE CONDITIONS OF KARAKALPAKSTAN.

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Abstract. This article describes the results of research on the production and storage of cornmeal grown in the northern regions of Uzbekistan. In this, scientifically based conclusions on the storage of processed corn flour products were made.
Keywords. Oatmeal, flour, polypropylene bags, packaging, flouring, amount of flour output, water absorption.

Enter. Because flour is unstable, consists of small parts, and is an easy food for microorganisms and pests, storage processes are somewhat complicated. In our experiments, we carried out experiments on the study of factors that are important in the storage of oat flour.

During the storage of flour, the development of microorganisms is prevented as a result of the correct selection of the storage mode (low humidity). During storage, the initial changes begin with the appearance of mold fungi. As a result, the properties of the starch in the flour change and an unpleasant smell is formed.

The purpose and specific issues of the research. Development of optimal methods of packaging and storage of processed corn flour grown in the Republic of Karakalpakstan.

Material and methods. The research was conducted in the following manner in order to obtain flour from corn grain and pack finished products in special containers:

- Studying the biochemical composition of oat flour;
- Analysis of the mechanical composition of oat flour;
- To conduct research on the choice of the period of storage of cornmeal and the optimal method of storage;
- Research on the impact on the technological indicators of cornmeal fermentation and the selection of the most optimal method of packaging.

RESEARCH RESULT AND DISCUSSION

The flour storage process consists of two stages: the ripening process after the flour is ready and the long-term storage process. It is not recommended to use freshly prepared flour directly for production.

Because biochemical processes in the flour continue after the grain is crushed. Experiments were conducted to study the effectiveness of these processes when carried out before and after packaging.

Table 1

Effect of the duration of ripening on the shelf life of oat flour

Duration of ripening, hours	Water absorption (mixing) of flour, %	Protein, %	oils,%	Ash content, %	The amount of crude fiber,%	Amount of starch, %
0	45,6 (Control)	10,74	2,92	1,24	2,5	62,9
12	48,8	10,09	2,75	1,16	2,3	59,1
24	51,5	10,49	2,58	1,09	2,2	55,6
48	58,7	11,80	3,21	1,36	2,7	69,1
72	58,1	11,09	3,02	1,28	2,5	65,0
96	57,3	10,43	2,84	1,20	2,4	61,1

According to the results of our experiments, research was conducted to determine the effect of the duration of ripening on the shelf life of cornmeal. As a control, the quality indicators in the state at the time of leaving the mill were selected. After that, it was left open for milling for certain periods, and the quality indicators were analyzed.

The water absorption of corn flour was equal to 45.6%. This indicator increased to 48.8% after 12 hours, 51.5% after 24 hours, and 58.7% after 48 hours. A decrease in this indicator was observed after the extension was continued. In particular, it was found that the water absorption rate was 58.1% when it was fermented for 72 hours, and 57.3% when it was fermented for 96 hours. It follows that if oat flour is fermented for 48 hours and then packaged, its water absorption properties increase up to 14%.

Also, changes in the protein content of oat flour during fermentation were observed. For example, the content of freshly ground oatmeal was 10.74%, after 12 hours it was 10.09%, after 24 hours it was 10.79%, after 48 hours it was 11.8%, and after 72

hours it increased to 11.09%. went It was observed that the amount of protein decreases when the fermentation process is continued.

This trend was repeated in parameters such as crude fiber content, starch content and ash content. In particular, according to our experiments, after 24 hours of maturation of cornmeal, it was determined that the water absorption of the flour was mixed up to 51.5%, the protein content was 10.79%, the fat content was 2.58%, the ash content was 1.09%, raw we can see that the fiber content has decreased to 2.2% and the starch content has decreased to 55.6%.

According to the results of our experiments, when we studied the effect of the duration of maturation on the shelf life of oatmeal after 48 hours, it was found that 58.7% of the water was mixed with the oatmeal, the protein content was 11.80%, the fat content was 3.21%, the ash content was 1.36%, and the raw fiber it was found that the amount increased by 2.7% and the amount of starch up to 69.1%.

Our experiences were determined at different times. When we determined the effect of the duration of ripening on the shelf life of cornmeal after 72 hours, it was found that the indicators were different. It was found that 58.1% of water was mixed with oat flour. It was observed that the content of protein decreased by 11.09%, fat by 3.02%, ash content by 1.28%, crude fiber content by 2.5%, and starch content by 65.0%.

When determining the effect of the ripening period on the shelf life of oat flour after 96 hours, the protein content of oat flour increased to 10.43%, fat to 2.84%, ash content to 1.20%, crude fiber content to 2.4%, and starch content to 61, It turned out to be up to 1%.

When oat flour was stored for different periods in 3 different ways, that is, in capacity containers, in cloth bags, in polypropylene bags, the changes in the composition of oat flour were different from each other (see Table 4.17).

Initially, experiments were carried out on the storage of flour of the Uzbekistan-5 variety of sorghum. Fresh flour was selected as a control. The composition of flour was analyzed for 60 days, 90 days and 120 days, and studies were conducted on which method of storage is more effective. The results were as follows. When the moisture level was studied, it was found that 11.67% was recorded when fresh, and 12.25% when stored in containers, 12.14% when stored in cloth bags, and 11.68% when stored in polypropylene bags during 60 days of storage.

Table 2

The effect of packaging method on shelf life of 5 types of sorghum flour in Uzbekistan

	Retention period	Storage method	Moisture	Protein	Oils	Kletchatka	Starch
1	Fresh (control)		11,67	12,73	4,18	4,39	67,3
2	When stored for 60 days	I	12,25	12,35	4,05	4,26	65,2
		II	12,14	11,98	3,93	4,13	63,3
		III	11,68	12,72	4,18	4,39	67,2
3	When stored for 90 days	I	12,97	12,34	4,05	4,25	65,2
		II	13,78	11,97	3,93	4,13	63,2
		III	11,69	12,70	4,17	4,38	67,1
4	When stored for 120 days	I	14,15	12,32	4,05	4,25	65,1
		II	17,12	11,95	3,93	4,12	63,2
		III	11,71	12,69	4,17	4,38	67,1

* I - When stored in capacious containers
II - When stored in cloth bags
III - When stored in polypropylene bags

It can be seen that the moisture content of the flour stored in polypropylene bags did not change much. A special feature of this packaging method is that there will be no loss of moisture due to the hermetic packaging of the product. Similarly, moisture level increased in the first two methods when shukabi were stored for 90 days. However, it has not lost its consumerism. When the storage period was 120 days, the moisture content in the first two methods was close to the critical value and exceeded. As a result, it became unfit for consumption.

In conclusion, flour made from Uzbekistan - 5 varieties can be stored in high-quality containers and fabric bags for up to 90 days, and in polypropylene bags for up to 120 days.

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