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## **STORAGE OF PUMPKIN FRUITS GROWN IN THE CONDITIONS OF THE REPUBLIC OF KARAKALPAGISTAN FOR DIFFERENT PERIODS AND METHODS**

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### **Аннотатсиya**

Ushbu maqolada qovoq mevalarini sifatli saqlash muddatlarini aniqlash bo'yicha izlanishlar olib borilgan. Shuningdek, saqlashning turli usullari bo'yicha tajribalar o'tkazilgan. Olingan natijalar bo'yicha xulosalar taqdim etilgan.

### **Аннотация**

В данной статье были проведены исследования по определению сроков качественного хранения плодов тыквы. Также проводились опыты по различным способам хранения. Выводы по полученным результатам представлены.

### **Annotation**

In this article, studies have been conducted to determine the terms of high-quality storage of pumpkin fruits. Experiments were also conducted on various storage methods. Conclusions on the results are presented.

***Kalit so'zlar:*** qovoq, harorat, havoning nisbiy namligi, organoleptic baholash, quruq modda, kraxmal, sovitish.

***Ключевые слова:*** тыква, температура, относительная влажность воздуха, органолептическая оценка, сухое вещество, крахмал, охлаждение.

***Keywords:*** pumpkin, temperature, relative humidity, organoleptic evaluation, dry matter, starch, cooling.

**Relevance.** Storage is a relatively complex and long-lasting phase of the technological cycle. Since agricultural crops are seasonal, this area is relevant. According to many researchers, in controlled

conditions (at a temperature of 6-8°C and a relative air humidity of 75-80%), pumpkin can be stored for 2-4 months to a year, depending on the variety. However, there is insufficient literature on the analysis of storage in uncontrolled environments and in a cut state. Cultivation and consumption of pumpkin in Uzbekistan is not as widespread as other vegetables. Its regionalized varieties allow the production and sale of this product in many regions of the country to meet the needs of the population.

**Storage in an uncontrolled environment.** During the research, experiments were carried out on storing pumpkin fruits of various types and varieties in an uncontrolled environment (with a temperature of 14-22°C and a relative humidity of air not exceeding 75%). Data on these experiments are presented in Tables 3.1.

It was found that when pumpkin fruits are kept whole in an uncontrolled environment, their biochemical composition and consumption value do not disappear for 180-240 days. Pumpkin fruits are usually products that can be stored for a long time. This was confirmed again during experiments. The composition of important components of pumpkin fruits was preserved for a long time. Dry matter content of fruits of all cultivars consistently decreased when pumpkin fruits were stored in an uncontrolled environment. During storage, the biochemical composition of pumpkin fruits was regularly studied. Also, decreasing tendencies of carbohydrates, organic acids and vitamins were observed. The amount of starch decreased sharply over time, and by the last periods of storage, all varieties except Volzhskaya seraya 92 had no starch at all.

During storage, varieties belonging to the hard-skinned cultural type showed more quality characteristics in terms of composition. Especially the fruits of the Non kadi variety were well preserved compared to other varieties.

The dry matter content of pumpkin fruits of this variety was initially 18.84% on average, after 60 days it was 17.9%, after 120 days it was 15.88%, after 180 days it was 15.16%, and after 240 days it was 14.48%. This means that its content is relatively stable. In other varieties, a sharper decrease in dry matter content was observed compared to Non kadi variety.

In turn, the decrease in the amount of sugar repeated this trend. Only on the 240th day of storage, it was found that there was no starch left in the composition. However, the amount of monosaccharides, sucrose, organic acids and other components did not decrease dramatically. During storage, the lowest storage characteristics were observed in the Medovaya cultivar belonging to the large-fruited pumpkin cultivar and the Kashgarskaya 1644 cultivar belonging to the Muscat pumpkin cultivar.

Refrigerate sliced pumpkins. In the sale, there is often a need to sell pumpkin in the form of cut slices - 0.5-1.5 kg mass. Because of this, one pumpkin fruit usually makes a lot for one time use at home. From this point of view, it is appropriate to sell them as semi-finished products. For this reason, experiments were conducted on storing pumpkin fruits as a semi-finished product cut in slices in a cooled state. The main goal was to study the optimal period of storage of pumpkin fruits in the state of slices.

According to the results of the research, it was found that sliced pumpkin fruits can be stored for 3-5 days in home conditions. But in some cases, a longer period is required for storage. Information about changes in biochemical composition, organoleptic properties and other parameters of pumpkin fruits during storage in the cut state is not given in the literature. We have also carried out these studies in

our experiments.

In order to study the changes in the consumption value of pumpkin fruits, we cut and prepared for storage no more than 500 grams of the researched varieties. The cut pumpkin slices were stored in a cooling chamber at a temperature of +2...+4°C and a relative humidity of 80-90%. Analyzes to determine organoleptic and microbiological parameters were carried out on days 5, 10, and 15, and experiments to determine biochemical parameters were carried out on days 3, 6, 9, 12, 15.

Changes in the biochemical composition of the researched pumpkin fruits when they are stored in the form of slices. Complex biochemical changes take place during ripening and storage of pumpkin fruits. After the fruit is removed from the stem, the supply of water and other nutrients stops. The energy that maintains the quality of the fruits stops coming, and on the contrary, the fruits begin to be consumed, as a result of which there is a decrease in nutrients.

Barra identified the main trends of changes in the biochemical composition of the product. Basically, during the storage period, a decrease in the amount of the main nutrients was observed. Only at the initial stages of storage, the amount of  $\beta$ -carotene and sucrose increases as a result of the hydrolysis of starch in pumpkin fruits. During the storage of pumpkin fruit segments, in addition to determining its organoleptic properties, the content of dry matter and sugar in it with the weight of sucrose and monosaccharides, as well as the amount of starch, organic acids and vitamins were also studied.

Table 4.16 shows information on storage of slices of pumpkin fruits in cooling chambers at a temperature of +2...+4°C and relative air humidity of 80-90%.

Experiments show that during storage, a decrease in the amount of dry matter was observed in all varieties.

The main reason for changes in the quality and quantity of sugar in fruits and vegetables is its respiration. First of all, monosaccharides, as well as organic acids, fats, proteins and phenolic compounds are involved in the breathing process.

The basis of dry matter is sugar and starch.

In general, Ispanskaya 73 and Volzhskaya seraya 92, belonging to the large-fruited pumpkin species, showed an insignificant increase in monosaccharides, which amounted to 5.9% and 6.6%, respectively. This indicator decreased by 5.8% in the Rossiyanka variety belonging to the same species. Medovaya variety remained unchanged. The reduction of monosaccharides was observed by 15.3% in Biryuchekutsky 27 variety, which belongs to the hard-skinned variety, and by 27.5% in Kustovaya oranjevaya variety. In this way, during the storage (15 days) in all varieties, the trend of decreasing monosaccharides was observed. Only in large-fruited pumpkin varieties, this process happened late, in the first half of storage, pumpkin fruits spent the ripening period.

## Summary

1. When storing pumpkin fruits whole in an uncontrolled environment, their biochemical composition and consumption value do not lose up to 180-240 days (at a temperature of 14-22°C and a relative humidity of air not exceeding 75%).

2. When storing cut pumpkin slices at a temperature of +2...+4°C and a relative humidity of 80-90%, the limited storage period is 10 days. Fruit slices of Michurinskaya sladkaya 13 and Volzhskaya seraya 92 varieties can be stored in good quality for up to 10 days, it is recommended to store fruit slices of other varieties for 5 days. It was found that the fruits of the Medovaya variety belonging to the large-fruited type are completely unsuitable for storage in the conditions of the study in the form of slices.

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