



INFLUENCE OF STORAGE CONDITIONS ON PRESERVATION OF POTATO

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Article history:	Abstract:
Received: 26 th January 2021	The article presents the results of research on changes in the chemical composition during long-term storage. It was established that the protein content during the storage of tubers decreased by 1.5 ... 2 times when cultivating potatoes with the use of complete mineral fertilizers. The amount of protein when adding phosphates changes insignificantly. During storage (6 months), the loss of starch in tubers was 5 ... 11%. After harvesting, hydrolysis of starch to monosugars begins, which continues until February, and then slows down somewhat. Therefore, at the beginning of storage in tubers, the amount of sugars sharply increases, then decreases by the beginning of January.
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1. INTRODUCTION:

Potatoes are not only healthy - they also feed us all year round, from harvest to harvest. In terms of calorie content, potatoes overtake all vegetables, since 70-80 % of the dry matter in it is starch.

The homeland of the potato is South America, where it is still found in the wild. Tubers were first brought to the territory of our country from tsarist Russia, during the conquest of Turkestan, subsequently gaining general popular recognition of the "second bread". With the introduction into culture, a person even more appreciated its nutritional qualities, at the same time its medicinal properties.

Potato tubers contain proteins, carbohydrates (starch - 13.1-36.8%, fiber, pectin substances, mono- and oligosaccharides - glucose, fructose, sucrose), vitamins and mineral salts. The main vitamin is ascorbic acid (10-54 mg /%). The body's daily need for vitamin C can be fully replenished with potatoes if consumed in 200-300 g (Table 1).

Table 1 Product composition table by weight

Chemical composition	Nutrient Per Serving	
	From the total mass, %	%, DM
The weight	100 g	-
Water	83,29 g	-
Carbohydrates	9,94 g	3 %
Alimentary fiber	2,5 g	13
Fats	0,1 g	0
Protein	2,57 g	4
Alcohol	-	-
Cholesterol	0 mg	-
Evil	1,61 g	-

Almost the entire complex of vitamin B (B1, B2, B6), folic acid, in addition to vitamin B5 (nicotinic acid) was found in tubers. All these additional nutritional factors are of great physiological importance as the material necessary for the body to build enzyme systems. In addition, carotenoids have been found that play the role of provitamin A, sterols, phospho-, galacto- and sterol-containing lipids, organic acids (caffeic, chlorogenic). Of the mineral salts in tubers, potassium (568 mg /%) and phosphorus salts prevail, and of organic acids - citric, oxalic, and malic. The peel of potato tubers and the entire aerial part of the plant contains the poisonous glycoalkaloid solanine. It is especially abundant in sprouted tubers.

2.OBJECTS AND METHODS OF RESEARCH:

Potato production consists of two blocks: field work and storage. The first, depending on the variety and climatic zone of cultivation, lasts 3-4 months. The second block is incomparably larger - depending on the purpose of the potato and the time of sale, it can last from 2-3 to 8-11 months.

During this time, complex physiological and biochemical processes take place in the tubers and in their mass, various pathogenic microorganisms develop. As a result, the chemical composition of tubers, the gas composition of the environment and the relative humidity of the air change, conditions arise for the defeat of potatoes with diseases in the form of dry and wet rot.

3.RESEARCH RESULTS AND DISCUSSION:

The change in the content of reserve substances in potato tubers depends on the cultivation conditions. The protein content during the storage of tubers decreased 1.5 ... 2 times when growing potatoes with the use of complete mineral fertilizers. The amount of protein when adding phosphates changes insignificantly. During storage (6 months), the loss of starch in tubers was 5 ... 11 %. After harvesting, hydrolysis of starch to monosugars begins, which continues until February, and then slows down somewhat. Therefore, at the beginning of storage in tubers, the amount of sugars sharply increases, then decreases by the beginning of January. When potatoes are cultivated without fertilizers, the total loss of sugars is 19% and 3% with the aftereffect of phosphates. The loss of sugars with the annual introduction of carbammophos is 9 ... 11 %. The fiber content in tubers during storage decreased 2.2 times (up to 1.9 % of dry matter). In January - February, the most intense hydrolysis of cellulose is observed.

The amount of inorganic phosphates decreases during storage. The synthesis and accumulation of compounds that are actively used by seedlings that develop on tubers at the end of the storage period or in preparation for planting, that is, organic acid-soluble phosphates (nucleotides and sugar phosphates), are intensified.

The greatest losses of ascorbic acid in tubers for 6 months of storage occurred:

- in November by 11 ... 12.5 mg%;
- in April by 2.7 ... 3.2 mg%.

The decrease in the amount of ascorbic acid in tubers was 71 ... 73% of its initial content. The size of the loss of vitamins during storage of tubers was not significantly affected by the nutritional conditions during the period of plant growth and development.

Losses of dry matter of tubers With the use of slow-acting fertilizers decreased to 5 ... 8%, in the control variant these losses are about 10%. In potato tubers grown using nitrogen fertilizers at a dose of 180 kg / ha (against the background of P80K100), significant losses of dry matter and water were observed during storage. Losses of dry matter and water when nitrogen was applied at doses of 60 ... 150 mg / ha did not exceed 2% and 4%, respectively.

The preservation of the quality of the finished product during storage depends on the varietal characteristics of the culture (Table 2).

Table 2
Evaluation of the taste of dried potatoes, points, depending on the variety and storage time

Picasso	5	4,6
Ramona	4,8	3
Cardinal	4,2	3,7
Desiree	3,1	3

4.CONCLUSION:

All varieties of tubers except Desiree produce good and excellent dried potatoes. There is a slight decrease in the quality of the dried product obtained from the tubers of the Picasso variety and a sharp decrease in the quality of dried potatoes of the Ramona variety after 5 months of storage.

At high temperatures during the drying process, sugars react with amino acids and form dark-colored compounds - melanoidins. These substances continue to be synthesized during storage, while the more sugars are contained in potato tubers, the more intensive the synthesis process takes place.

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