



## CHANGES IN SOME QUALITY INDICES OF APPLES DURING STORAGE AND KEEPING IN COLD ROOMS

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**Abstract:** Fruit preservation must ensure such conditions that, at the time of their valorization, they meet all the physical, biochemical and organoleptic characteristics that define quality (taste aroma, amount of vitamin C, firmness and dehydration of fruit tissues). The degree of modification of these indices in fruits depends on the applied preservation method. As the object of study, we used the fruits of the Generos apple variety. Apples have an increased preservation capacity and in order to ensure consumption over a longer period of the year, it is necessary to study the peculiarities of regulating their ripening processes, and based on the results obtained - to develop a modern preservation technology. As an alternative to the preservation method in the ordinary atmosphere (AO), the preservation process with the application of the Grand Fresh ethylene synthesis inhibitor was investigated. Under the conditions of the variant with fruit storage in the atmosphere of the cold room, enriched at the initiation of storage with vapors of the Grand Fresh ethylene synthesis inhibitor gas, upon discharge the aforementioned quality indicators proved to be preserved much better than under the conditions of the variant with storage in the usual atmosphere.

### • Introduction

The success of fruit preservation is conditioned by ensuring and maintaining optimal factors: low temperature, high relative air humidity, good air circulation, optimal gas composition of the ambient environment, which directly intervene in slowing down physiological processes. These factors are characteristic of each fruit species and even varieties within the species.

### • Material and method

In the current study, the quality of apple fruits, the Generos variety, and the extent to which they can satisfy consumption requirements, depending on the storage method applied, was determined, using organoleptic analysis (taste appreciation) in conjunction with chemical analysis (Z/A ratio and vitamin C content) and technological analysis (standard fruit quantity, core firmness and degree of tissue dehydration), recorded at the end of long-term storage, using the methods proposed by. The experiments were carried out under cold storage conditions. At the beginning of storage, the apple fruits were treated by fumigation with the ethylene synthesis inhibitor Grand Fresh of 0.44g/m<sup>3</sup> for 24 hours, then stored under normal atmospheric conditions at a temperature of 1°C and relative air humidity of 85-90%. The control fruits were stored under the same conditions of the AO. By characterizing each of the nominated indices, which respond to fruit quality, we will conclude about the effectiveness of the applied preservation methods.

Determining the degree of influence of the storage method on the modification of some physico-chemical quality indices of apple fruits, Generos variety, after 180 days of storage

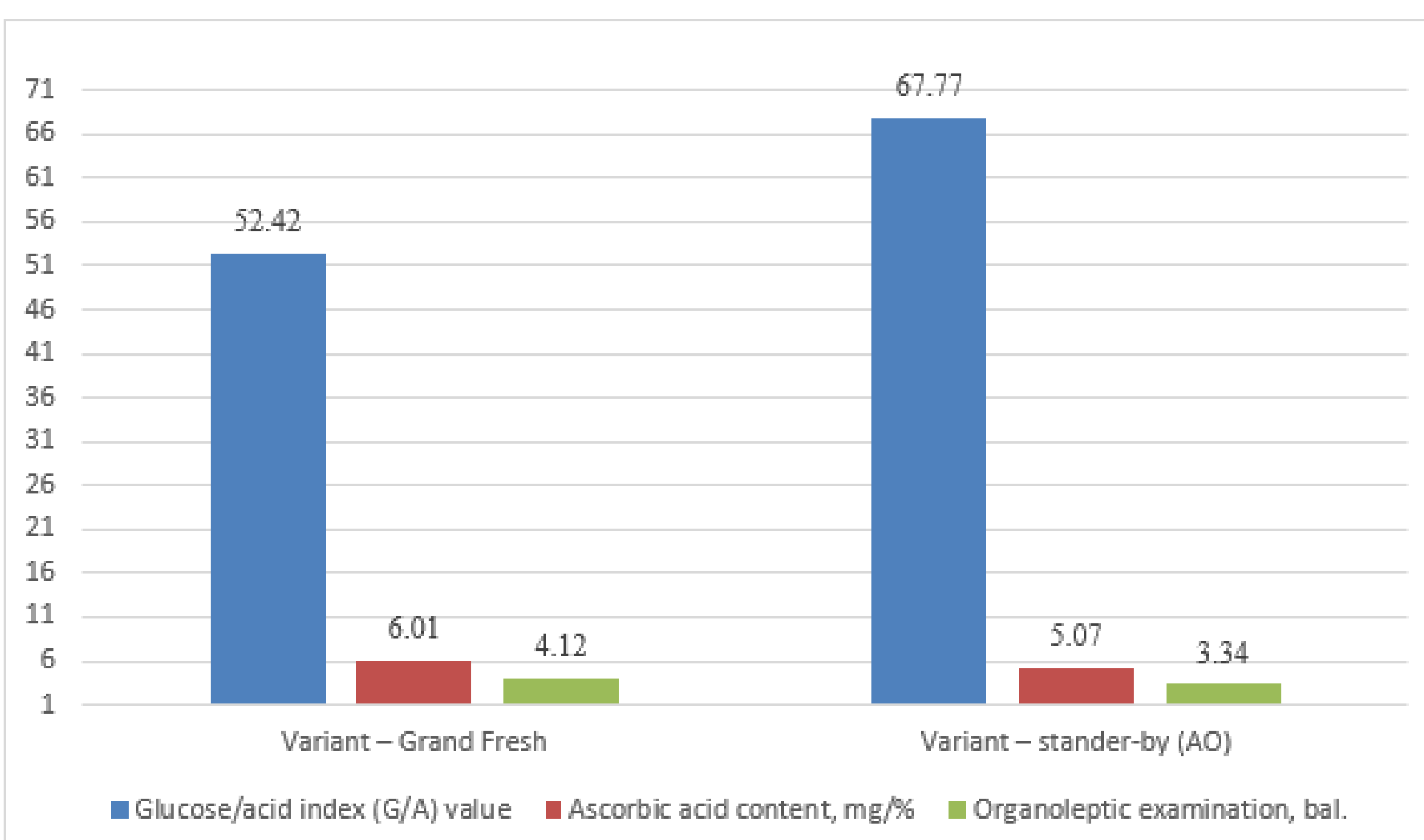
Storage method	Glucose/acid index (G/A) value	Ascorbic acid content, mg/%	Organoleptic examination, bal.
Variant – Grand Fresh	52.42 ± 0.05	6.01 ± 0.007	4.12 ± 0.19
Variant – stander-by (AO)	67.77 ± 0.01	5.07 ± 0.001	3.34 ± 0.18

Determining the degree of influence of the storage method on the modification of some technological quality indices in apple fruits, Generos variety, after 180 days of storage

Storage method	Tissue firmness, kg/cm <sup>2</sup>	Natural perishability, %	Standard fruits, %
Variant – Grand Fresh	6.55 ± 0.08	3.36 ± 0.09	96.9 ± 0.53
Variant – stander-by (AO)	5.75 ± 0.08	10.48 ± 0.23	34.0 ± 0.47

### • Results and discussions

In our research, the Grand Fresh variant determined lower values of the glucose/acid index compared to the values recorded at the end of storage in the usual atmosphere (on average by about 33.0%), (table 1). This fact indicates a slower rate of biodegradation of organic compounds, respectively a more advanced quality index. The ratio between soluble carbohydrates and organic acids is the most widely used practical test for determining taste changes. The organoleptic examination, through the score given in the analysis report, completed during the tasting process, confirmed the superior quality of apple fruits, preserved under atmospheric conditions with the application of the Grand Fresh ethylene synthesis inhibitor (table 1). Vitamins are biocatalysts of vital processes, indispensable for life, absent from human metabolism producing serious functional disorders. The impossibility of preserving vitamins in the body implies the need for a permanent intake in daily food components. Our research has demonstrated that the application of the ethylene synthesis inhibitor Grand Fresh partially slows down the biodegradation of vitamin C in apples, quantitatively exceeding the control variant by 11.8% at discharge (table 1).



### Conclusions

The results of the research show that the degree of modification of the metabolism and, respectively, of some indices that define the quality of the apple fruits studied depends on the storage method applied;

In the Generos apple variety at the end of storage, under the conditions of the variant with the application of the Grand Fresh ethylene synthesis inhibitor, the gustatory aroma, the amount of vitamin C, the firmness and dehydration of the fruit tissues are preserved much better than under the conditions of the variant with storage in the usual atmosphere, which denotes an increased vitality of the fruits and an advantage of the storage process.

The technological results show that the degree of resistance of the apple fruits studied, to qualitative and quantitative depreciations during the 180 days of storage, is maintained in direct dependence on the storage method applied.