

STUDIES REGARDING THE QUALITY OF BERRIES DURING STORAGE

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Abstract

Berries are the most valuable fruits because of their bioactive compounds, low level of pesticides and other contaminants. There are also very valuable because of their taste and color and because increase the local economies and sustainability of the area. Berries because of low cost of production enrich the rural mountain poor area as well.

*Fruits of *Prunus spinosa*, *Mespilus germanica*, *Rosa canina*, there are one very valuable among berries because of the vitamin C content and high level of production. The bushes grows very easy on any kind of soil, even degraded.*

*Present study try to monitor the following quality parameters of *Prunus spinosa* fruits during storage because of very well known issues regarding storage of berries.*

Key words: *Prunus spinosa*, *Mespilus germanica*, *Rosa canina*, vitamin C, dry matter, total polyphenols content.

INTRODUCTION

Prunus spinosa known as Blackthorn is one of the most popular berries in Romania. There is important to evaluate the blackthorn fruits quality in order to have an overview about the product considering the issues regarding harvesting, handling and storage of the product. The quality is influenced by storage duration, and there are different ways of maintaining shelf life of blackthorn fruits.

Rosa canina known as Dog rose is also one of the most harvested and spreaded berries from Romania. The fruits are very abundant and plant is located all over the plains and hills, even in the mountains.

Mespilus germanica known as Common medlar is not very well known but latest studies shown good quality properties regarding bioactive compounds.

There were considered 3 storage systems, fresh in bulk, refrigerated in bulk and frozen in bulk.

There is important to have this thresholds temperature because during harvesting in late autumn the process can be replicated in natural way and until the collecting fruits can lose important amounts of components.

In this way parameters taken in study are important from all points of view, innocuity especially. Methods used for analysis were according with romanian standards and are quottation in latest studys.

MATERIAL AND METHOD

For determination the physico-chemichal and organoleptic indicators were carefully examined 6 samples from each kind of fruits.

The samples were kept fresh (20°C), refrigerated (0-4°C) 2 days and freezed at (-18°C) 30 days. The parameters were determined in the same day and in the second day.

The samples were examined from the organoleptic point of view, and they analyzed the shape of the exterior, aspect of the section, general aspect, also the consistency, the color, the smell and the taste. The samples that not meet the normal properties of the fruits were considered altered and were not taken in to study.

In the physic-chemical examination consist in following parameters assesment: vitamin C, dry matter, total polifenols content and pH.

The research methods were according Romanian regulation. As following:

Organoleptical parameters:

Were done by scoring the samples from 0 to 10 points.

The Vitamin C content: was done by titration method using KI in presence of starch.

Dry matter: was done using own at 105 °C one hour.

pH: was done using a pH-meter, potentiometric method.

Poliphenolic total content: was done by Folin-Ciocalteu method.

RESULTS AND DISSIONS

Organoleptic examination did not reveal any significant changes to the conditions of admissibility imposed by legal regulations allowed.

Table 1. Reserch results regarding dry matter of the fruits

No.	Specie	Fresh (%)	Refrigerated (%)	Freezed (%)
1	<i>Rosa canina</i>	28,5	23,5	30,4
2	<i>Prunus spinosa</i>	25,0	25,5	20,8
3	<i>Mespilus germanica</i>	20,9	24,8	9,3

Because of morphological aspects the biggest dry matter was recorded to *Rosa canina* fresh fruits.. After refrigerations because of methabolism and morphological particularities the biggest dry matter was recorded to *Prunus spinosa*. The freezed fruits were assessed after reaching

0-4°C and after the melting juice was drained. *Rosa canina* fruits after freezing had the biggest dry matter preservation ratio because of their structure.

Table 2. Reserch results regarding Vitamin C of the fruits

No.	Specie	Fresh (mg%)	Refrigerated (mg%)	Freezed (mg%)
1	<i>Rosa canina</i>	148,98	141,92	132,82
2	<i>Prunus spinosa</i>	17,19	15,91	10,19
3	<i>Mespilus germanica</i>	3,44	2,94	1,24

The highest Vitamin C content was recorded in fresh *Rosa canina* fruits. The decreasing of Vitamin C content after cooling is lower in *Rosa canina* fruits, especially because low quantity of cellular juice drained during cooling and freezing. The worst evolution it was recorded to *Mespilus germanica* that losse more than 70% of Vitamin C content. This evolution is caused by the melting down of the intracelular water that drained also a lot of vitamin C and also by freezing degradate it.

Table 3. Reserch results regarding Total amount of poliphenolic compounds of the fruits

No.	Specie	Fresh (me/g galic acid)	Refrigerated (me/g galic acid)	Freezed (me/g galic acid)
1	<i>Rosa canina</i>	215	200	126
2	<i>Prunus spinosa</i>	132	95	55
3	<i>Mespilus germanica</i>	45	22	14

The highest Total amount of poliphenolic compound content was recorded in fresh *Rosa canina* fruits. There is also evident the decreasing of the level coresponding of cooling and storage process. Comparing with vitamin C the ratio of decreasing of Total amount of poliphenolic compound is much higher in *Rosa canina* fruits but not so much in the rest of the fruits.

Table 4. Reserch results regarding pH of the fruits

No.	Specie	Fresh, °	Refrigerated, °	Freezed, °
1	<i>Rosa canina</i>	6,1	5,7	6,1
2	<i>Prunus spinosa</i>	5,6	5,5	6,5
3	<i>Mespilus germanica</i>	7,2	7,2	7,0

The pH evolution shown that during cooling and storage there were no alteration process for all samples. That allow us to suggest that high bioactive compounds level provide protection for fruits. The values recorded were according to our data very stabile.

CONCLUSIONS

The specie that shown the biggest level of bioactive compounds according with our data was *Rosa canina*.

The results shown that all the fruits taken in to study can be cooled and stored at low temperature without alteration.

The bioactive compounds level it was quite stabile excepting Vitamin C level that decrease severe in *Prunus spinosa* and *Mespilus germanica*.

The dry matter level remaind after cooling and storing at higher level just in *Rosa canina*.

In this way we suggest collecting, cooling and storing mainly *Rosa canina* fruits in order to have the smallest losses from quantitative and qualitative point of view.

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