CHANGE IN THE QUALITY PROPERTIES OF TWO DIFFERENT PEPPER VARIETIES IN FRESH AND DRIED CONDITION

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Abstract

Red pepper (Capsicum annuum L.) as a vegetable crop can be processed in multiple ways. The significance of the red pepper used in human nutrition is based on the presence of nutrients, vitamins, minerals, carotenoids, etc. Industrial peppers of kurtovska kapija variety and spicy peppers of horgosh variety, all grown in R. Macedonia were used in this examination. The process of drying was performed in an industrial chamber dryer by applying controlled technological process.

The quality estimation of the fresh and dried peppers was carried out by applying sensory, mechanical and chemical methods (total dry matters, sugars by HPLC-RI, total acids, carotenoids by HPLC-DAD). The spicy variety horgosh had been characterized with the highest content of total dry matter: 11.94 % in fresh and 91.42 in dried red peppers. The highest content of total carotenoids was determined in the spicy variety horgosh: 690.15 mg/100 g in fresh and 493.94 mg/100 g in dried form.

Kay words: *red pepper, drying, variety, quality estimation*

1. INTRODUCTION

The pepper belongs to the family *Solanaceous*, species *Capsicum annum L.*, and it is an economically important vegetable crops. It is widely cultivated in many countries e. g. Spain, Turkey, Hungary United States and Egypt (Hayam, 1997). In R. Macedonia it is the second most popular vegetable, after tomatoes. According to data from the Statistical review: Agriculture, orchards and vineyards (Statistical review, 2014), the total area planted with peppers in Macedonia was 8522 ha, with a production of 175 867 t of peppers.

There are different varieties of peppers with different shades (from green, yellow, orange, red and purple), shapes, sizes and flavors (Lucier & Lin, 2001). The pepper fruits primarily can be consumed fresh (in salads, in addition to meals), as well as in various forms of preparations such as: boiled, grilled, marinated, paste, sauces, spices, frozen, dried and others. For most peppers products, it is required pepper fruits to be used with intensive red color because they have a higher content of dry matter, pigments and also possess more pronounced sensory characteristics (Marković & Vračar, 1998).

Physicochemical parameters which are important for the quality of peppers during pepper fruit growth and development are weight, color, firmness, total soluble solids and acidity (Martınez et al., 2007). The texture of pepper fruits is with particular crispness, what is important quality attribute to consumers. The major post-harvest problem with this crop is excessive softening that may cause shrinkage, drying and pathological disorders which severely reduce the quality and acceptability of the product. (Sethu et al., 1996). The softening that occurs in any fruit is primarily due to a change in cell-wall carbohydrate metabolism, resulting in a net decrease in certain structural components. The changes in cell-wall composition result from the action of hydrolytic enzymes produced by the fruit (Bartley & Knee, 1982, Labavitch, 1981].

According to their chemical composition, peppers are naturally rich in essential nutrients macronutrients, carbohydrates, amino acids and fat acids. Peppers are known to be good sources of different phytochemicals, including vitamin C, phenolic compounds, flavonoids, and carotenoids (Alvarez-Parrilla et al., 2011). The pepper has been described as the vegetable with the highest vitamin C content (Lee & Kader, 2000). Additionally, the phenolic compounds in peppers contribute to fruit

sensory and nutritive quality in terms of modifying color, taste, aroma and flavor (Ornelas-Paz et al., 2010). The contents of phytochemicals in peppers depend on cultivar, maturity, growing conditions, and postharvest manipulation. These compounds are known to present high antioxidant activity (Materska & Perucka, 2005). The presence of vitamins, hormones, enzymes and other substances are essential for normal growth, development and normal functioning of physiological and metabolic processes in the body (Vračar, 2012).

The health benefits of peppers are well known by nutritionists and health officials. There are a lot of published papers related to the knowledge that by consuming the peppers as vegetables, there is reduction of the risk of chronic diseases such as cardiovascular diseases and cancer (Sies and Stahl, 1995, Steinmetz and Potter, 1996). The most significant substances in peppers are those that have antioxidant properties such as ascorbic acid and β-carotene, which are represented in a significant amount. The β-carotene is identified as a potential anticancer substance (Liebler, 1993; Gaziano et al., 1995; Sies and Stahl, 1995), and is known as an antioxidant and a precursor of vitamin A (Sies and Stahl, 1995).

Peppers are an excellent source of natural color materials carotenoids, including: capsorubin, cryptoxanthin and zeaxanthin, present as esters of fatty acids (Somos, 1984). The most important pigments are capsanthin and capsorubin and its isomers, represented by 30 to 60 % and 6 to 18 % respectively of the total number of carotenoids in fruits (Nadeem, et. al., 2011). The intensity of the red color is primarily a function of the amount of these pigments. The Hungarian and Spanish spicy varieties of peppers are used especially for the production of spicy pepper, due to a high content of capsanthin and capsorubin compared with other varieties (Govindarajan & Gupta, 1985). Quality to spicy peppers are determined based on the amount of carotenoids in fruits (Marković and Vračar, 1998). It is recognized that various factors influence the composition and quantity of carotenoids, as well as bioactive components such as vitamins C and E, which have an important role in the stability of the colored matters during ripening, processing and storage of red peppers (Biacs et. al., 1992; Daood et al., 1996). Carotenoids are generally quite stable in their natural environment, but when food is exposed to high temperatures or when it is exposed to longer periods of light or oxygen, they are very unstable, resulting in the loss of color intensity, which negatively affects the sensory quality of the final products (Kaltejt 2011; Coultate, 2009).

The colored matters are an essential ingredient for visual evaluation of the products. Mainly is required to processed varieties of peppers that have intense color. This is necessary and important, because the addition of artificial colors in most processed vegetables is prohibited, but also because of loss of color occurred during the processing, and later during storage. Colored matters are taken as an element for determining the suitability of a particular varieties of peppers as a raw material for processing (Niketić-Aleksić, 1994). Forthcoming regulations will tend to restrict the use of foodstuff colorants exclusively to natural compounds, while artificial compounds will disappear progressively from the lists of acceptable colorants (Chambolle, 1992).

To extend the useful value of food, the man in its history developed and applied different ways and technologies of preservation. As one of the oldest techniques of preservation is drying (revocation of water - dehydration), which in today's modern technology has even greater application. The drying procedure involves the application of appropriate procedures for preparation, appropriate regime of drying and application of advanced equipment. This will provide a product that will be delivering much better quality and use value (nutritional value and organoleptic properties), and will be in accordance with legal regulations (Vereš, 2004).

The sequence of industrial operations (drying, grinding & storage) of paprika may destroy part of the components initially present in the fruit, in particular the fraction including the carotenoid pigment which is responsible for the commercial quality of the product (Salmerón-Salmerón, 1973). Applying the procedures of preservation usually cause change in a certain degree of some physical, chemical or physical-chemical properties, which are defined with some parameters for determining quality as well as the other components of the chemical composition (Vereš, 2004). By a greater number of scientists

have been made research of changes in the content of bioactive components in order to determine how much of them are preserved after the applied technological process of drying of pepper.

It should be taken into account that the variations that occur in dried products are as a result of the initial quality of the raw material, the method of preparation, drying conditions (temperature, time, air speed convection), the applied equipment, and the manner and time of storage until the final use of the finished product. (Albrecht et al., 1991; DeRitter, 1982; Klein & Perry, 1982; Selman, 1994; Gregory, 1996). The initial moisture content and its modification during processing of fruits indicates to the operator how to modify the temperature of the process, which has two significant features: mild and lengthy conditions. Although in some cases decreases on the carotenoid content after drying have been detected, generally, the mild conditions of temperature and initial moisture content of fruits preserve the original carotenoid content of the fruits and even allow an increase on it due to a biological activity of fruits that produces, to some extent, a new (de novo) biosynthesis of carotenoids (Mınguez-Mosquera et al., 1994). In addition, it is not only that a control of processing parameters is necessary but also it should be adapted to ripening stage of fruits (Perez-Galvez et al., 2001). Standardization of traditional process comprising both temperature control and adaptation to the ripening degree of fruits would provide a way to increase quality of the final product and homogeneity on production. Furthermore, prediction of color upholding during storing could be done on the basis of processing parameters applied.

2. MATERIALS AND METHODS

The aim of the present work was to investigate the quality and nutritional properties of two varieties of sweet pepper (Capsicum annuum L.): variety *kurtovska kapija*, harvested from the Strumica region, which is commonly used in manufacturing of preserved vegetables and spicy variety *horgosh*, harvested from the region of Negotino and Demir Kapija, commonly used for drying and getting minced spicy pepper. These fruits are harvested at technological maturity, when the fruits are characterized by intense red color and have reached the maximum variety features.

In order to determine their quality in each of the tested varieties of fresh pepper the chemical and sensorial properties were analyzed. The fresh pepper varieties were dried. Certain chemical and sensory properties of the dried products were investigated in order to determine of the quality and to estimate the changes in quality of each variety after the air treatments. The technology of drying was performed at the facility of the factory "Sika", located in the village Przdevo, R. Macedonia.

The analysis of the mechanical properties of fresh pepper was performed at randomly selected 50 peppers fruits, from both varieties of peppers, *kurotvska kapija* and *horgosh*. Following mechanical properties were determined: mass of peppers fruit (g), length of fruit (cm), width of fruit (cm) and thickness of pericarp (mm). Based on the values of the mass of the pepper fruits (g) and mass of cleaned fruits of peppers (g) the percentage of yield was calculated, which is especially important for processed vegetables.

The analysis of sensorial properties of fresh peppers fruits was done by using descriptive (descriptive) sensorial method, whereby were assessed color, smell, taste, appearance, shape and texture. According to the results obtained from the established mechanical and sensorial properties of both varieties fresh peppers was made a classification by class and quality assessment according to national valid legal regulations.

The preparation of peppers for drying is virtually the same as other processing technologies. Peppers were visually controlled regarding their biological or chemical damages, maturity and the deviation of the variety according to the technological characteristics and suitability for drying. The procedure of peppers washing was performed for removing the mechanical impurities and then peppers enters in slicing machine, for cutting out of 3-4 parts. Then pepper fruits were put on shelves for food drying with dimensions 900 × 1900 mm. The technology of peppers drying was carried out continuously, so that entering of trolleys was done in intervals. Drying was carried out under controlled conditions of temperature, humidity and air speed convection. In the initial phase, the drying temperature may be

higher, but not more than 80 °C for fresh pepper, and 75 °C for partly dried. In the final stage of drying temperature should not be higher than 60 °C. At the final phase, the moisture content should be between 6-8 %. Usually in production practice of drying, the spicy varieties of peppers have thin pericarp and the drying process was 24 hours. So, in case of drying peppers variety which was not spicy, with another variety features, it should keep an eye on the final humidity of the dried product. According to good manufacturing practice, it was determined that the yield of dry pepper is 12 kg from 100 kg of fresh pepper.

Dried peppers were getting cool for half an hour. Then followed inspection of the dried peppers fruit, to determined deviation in terms of color or quality on fruits and if they were not appropriate dried. Dried peppers with humidity not more than 10 %, were poured on a working table, where, according to the further purpose are processed in ground spicy pepper or Bukovec or packaged whole dried peppers fruits in proper packaging, polyethylene (PE) sacks or bags. For separation of metallic impurities there is possibility to use metal detectors, where the electronic detection head is placed on the dried peppers which are moved on the processing tape. Packaging of dried pepper was in bags for retail and in sacks for wholesale or storage. Each packing was labeled with declaration with necessary data, in accordance to the regulations.

The chemical analysis was made in order to analyze certain parameters in order to determine the quality of fresh and dried peppers. For this purpose, the standard laboratory methods were applied for determination the following chemical parameters:

Total dry matters by using the gravimetric method, in dryer on temperature of 105 °C, until achievement a constant mass (AOAC 925.10, 1995);

- Total acids by using the volumetric method, 0.1 M (mol/L) solution of NaOH, 1 % solution of phenolphthalein as an indicator (AOAC, 942.15, 1995);

- Total sugars (glucose and fructose) by using liquid chromatography with HPLC- RI method, with appropriate aqueous pre-extraction of sugars from samples (ASU # 35 LMBG L00.00, 1984);

- Carotenoids were extracted by using organic solvents as methanol, acetone and dichloromethane (2: 1: 1). Quantification was performed by using liquid chromatography with a gradient HPLC-DAD method (with a range of photo-diode detector) for the detection and quantification using HPLC column Nucleosil 100-3 C18, 250 x 4.6 mm, with the mobile phase isopropanol: acetonitrile: methanol, 55: 35: 10, flow rate 0.7 mL/min and temperature of 25 °C;

In dried pepper fruits of both varieties, by sensory method of assessment with points (max. 20) their sensory properties such as smell, taste, appearance and texture were assessed.

The comparison has been made to the changes in the examined properties from the quality (total dry matter, total sugars, total acids) incurred by using the technology of drying. As a significant component of the chemical composition of peppers represent carotenoids, especially β-carotene as a precursor to vitamin A that has of great biological value for humans, but is a component sensitive to light and high temperatures. For determining the quality of the final products, the parameters were used in accordance with applicable regulations in R. Macedonia (Official Gazette No. 16/2013, Official Gazette no. 69/2014).

Based on the results, a statistical processing was performed of the data by applying statistical method ANOVA (Analysis of Variance). There was applied a statistical software package for statistical analysis (IBM SPSS Statistics 21), where were made LSD (Least Significant Difference) tests, on the level of statistical significance $p = 0.05$ and $p = 0.01$.

3. RESULTS AND DISCUSSION

For examinations of mechanical properties of pepper varieties *kurtovska kapija* and *horgosh* was taken an average sample of 50 peppers fruits, harvested at full technological maturity. According to the obtained results it can be concluded that the mass of pepper fruits were ranging from 93.08 g to 164.33 g for the variety *kurtovska kapija*, while for variety *horgosh* were from 32.64 g to 70.53 g. The length of the peppers fruit for the variety *kurtovska kapija* were between 13.44 cm and 17.84 cm, and for the variety *horgosh* were ranged from 10.70 cm to 15.70 cm. For the variety *kurtovska kapija* were measured values for width of peppers fruit with an average value of 5.82 cm, and for the variety *horgosh* 4,16 cm. The average values for pericarp thickness of the variety *kurtovska kapija* were 0.46 cm, and for the variety *horgosh* 0.31 cm. The results for yield in percentage were with an average value of 80.65 % for the variety *kurtovska kapija*, and for the variety *horgosh* were 79.30 %. The results of the mechanical properties of the fruits of pepper were processed with statistical method ANOVA, in order to determine the effects of the factor variety, on the analyzed properties. It was established that the factor variety had a significant impact on the variability of all examined properties.

The determination of the sensorial properties of the examined varieties pepper *kurtovska kapija* and *horgosh* were done on fresh peppers, just before processing. It was noticed that both pepper varieties are in accordance with the Law of quality of agricultural products (Official Gazette br.140/2010) and the Law of amending and complement on quality of agricultural products (Official Gazette No. 53/2011 and 55/2012) and the Regulation on requirements in terms of quality of products processed from fruit and vegetables and mushrooms and their products (Official Gazette no. 69/2014). Under these Laws and Regulations, the examined pepper varieties were characterized by satisfactory quality for industrial processing, which includes their sensorial characteristics, which means that the pepper fruits were: whole, healthy and fresh, in stage of technological maturity, with shades of red, with characteristic smooth and shiny surface in examined varieties, with normal external moisture and without the presence of strange smell and/or taste, without the occurrence of a process of rotting; clean, without the presence of visible foreign matter; with a total of damaged pepper fruit no more than 8 %.

During the application of drying technology there are no significant changes or losses of some important components in terms of fresh raw material (sugars, proteins, minerals, vitamins, etc.), and also on the sensorial properties, as smell, taste, appearance, color. Color is one of the most important indicators of the quality of dried pepper. In general, the dried peppers are required to have specific intense and uniform color. A pale color, color without shine, "dead" or improper color changes due to shortcomings in production, pose a serious disadvantage in evaluating the quality of the dried peppers.

The sensorial evaluation of the taste and smell concerns of determining of the intensity or absence of foreign tastes and odors. Taste and smell must be examined in the stages of reception of the raw material and its storage until the time of processing, cleaning, drying, and during storage of the finished product.

The sensorial evaluation of dried peppers for varieties *kurtovska kapija* and *horgosh* was performed by a professional team, panelist. Evaluation of sensorial properties was conducted with a method of scoring system up to 20 points, as part of their overall quality control. The assessment was performed by individual scoring for each of the sensorial properties: color, smell, taste, consistency and appearance of the fruits. According to the sensorial evaluation of dried peppers it was concluded that for the property color, from max. 7, were determined 6.4 points for the variety *kurtovska kapija* and 6.73 points for the variety *horgosh*. For the odor as property, from max. 4 were determined 3.6 points for variety *kurtovska kapija* and 3.93 points for the variety *horgosh*. The taste as a sensorial property, from max. 4 ware determined 3.47 points for the variety *kurtovska kapoja* and 3.67 points for the variety *horgosh*. The sensorial property consistency, from max. 5 were determined 4.53 points for the variety *kurtovska kapija* and 4.87 points for the variety *horgosh*. According to these results were calculated that the total points of sensor evaluation. It can be stated that the variety *kurtovska kapija* was assessed with 18 points, and the variety *horgosh* with 19.2 points (out of max. 20 points).

The analysis of variance (ANOVA) made from the obtained results for a total score of sensorial analysis on dried peppers, showed that the factor variety have a statistically significant impact on the total number of points as variable.

The high nutritional and biological value of peppers is due to the rich content of carbohydrates, protein, fiber, oils, organic acids, minerals, vitamins, capsaicin, pigments and essential oils.

Chemical properties were examined as in fresh well as in dried peppers fruits from varieties *kurtovska kapija* and *horgosh*. The results are presented in Table 1, where is comparison between fresh and dried peppers of varieties *kurtovska kapija* and *horgosh*, for the following properties: water, total dry matter, fructose, glucose and total acids.

Table 1. Comparison of the chemical properties of fresh and dried peppers, for the varieties *kurtovska kapija* and *horgosh*

Parametars		***Total dry matters (%)***	***Fructose (%)***	***Glucose (%)***	***Total acids (%)***
kurtovska kapija (fresh)	$\bar{x}$	9.58	3.73	3.06	0.33
	SD	0.22	0.57	0.35	0.07
	CV	2.29	15.28	11.44	21.21
kurtovska kapija (dried)	$\bar{x}$	88.69	29.86	26.40	3.25
	SD	1.23	1.57	0.71	0.46
	CV	1.39	5.26	2.69	14.72
horgosh (fresh)	$\bar{x}$	11.94	4.42	3.87	0.42
	SD	1,24	1.27	0.46	0.09
	CV	10.39	28.73	11.89	21.43
horgosh (dried)	$\bar{x}$	91.42	30.76	29.28	2.52
	SD	0.42	2.68	1.11	0.87
	CV	0.46	8.71	3.79	34.52

$\bar{x}$ - mean value; SD – standard deviation; CV – coefficient of variation

According to the obtained results of the chemical composition, the content of total dry matter was higher in the variety *horgosh* as in fresh (11.94%) as well in dried (91.42%) peppers, in respect of fresh and dried peppers from the variety *kurtovska kapija*. It was established that for the average values of total dry matter, there were statistically significant differences among the tested varieties. Based on the results it can be concluded that the higher values for total dry matter in dried peppers are due to the evaporation of free water during the technology of drying, caused from the concentration of the total dry matter.

In the fresh peppers from the *horgosh* variety were determined higher value of fructose (4.42%) and glucose (3.87%), compared to the variety *kurtovska kapija*. Also, it can be concluded that in the dried pepper from the variety *horgosh* were found higher values of fructose (30.76%) and glucose (29.28%) compared to dried pepper of the variety kurtovska kapija. In terms of the glucose content, it can be concluded that the higher value of the variety *horgosh*, which is statistically significant different from the value of glucose content in the variety *kurtovska kapija*.

Based on the results it can be concluded that the content of fructose and glucose are over-represented in the variety *horgosh*. That is according to the knowledge that sugars, after the water, are the most represented nutrients in peppers, but they actually make up the largest share of total dry matter.

The higher content of the sugars in dried pepper was due to the drying technology where the total dry matter becomes concentrated. It should be noted that of particular importance is the proper execution of the drying procedure (time and temperature) because higher temperatures can cause caramelization of sugars which may adversely affect the taste and color of the final product. Fresh peppers from the variety *horgosh* were characterized by a higher content of total acids (0.42%) compared to the content in the variety *kurtovska kapija*. In the dried peppers from *variety kurtovska kapija* were determined the higher content of total total acids (3.25%) compared to the dried pepper from the *horgosh* variety. According to the average content of total acids between varieties, it was determined that the dried pepper has higher values, which is statistically significantly different from the values of total acids in fresh peppers.

The results of the analysis of the chemical properties of the fresh and the dried pepper were processed with statistical method ANOVA. It can be concluded that the variety as a factor has a statistically significant impact on the variability of the examined chemical properties, except the contents of fructose and total acids.

If we compare the obtained results from the sensorial properties and chemical composition of dried peppers for varieties *kurtovska kapija* and *horgosh* from the research, with the requirements prescribed in the above Regulations, it can be concluded the following: in terms of sensorial properties and the amount of water, dried pepper from tested varieties are in accordance with the prescribed quality norms.

In terms of water content, there is a possibility of deviations from the prescribed maximum value for the dried pepper for the variety *kurtovska kapija*, due to the characteristics of the variety, peppers fruits are with thick pericarp, and is necessary longer time of drying, unlike the spicy variety of pepper *horgosh*, which has a thin pericarp and therefore in the production practice is commonly used.

Table 2. Comparison of the content of carotenoids in fresh and dried peppers, for the varieties *kurtovska kapija* and *horgosh*

(mg/100 g)	***Fresh***		***Dried***	
	kurtovska kapija	***horgosh***	***kurtovska kapija***	***horgosh***
Capsorubin	0.26	1.43	1.05	0.95
Violaxanthin	2.66	5.79	2.59	6.17
Capsanthin	13.32	59.18	15.91	43.66
Cucurbixanthin	4.38	9.74	2.72	8.71
Lutein	0.70	2.17	0.55	1.65
Zeaxanthin	3.54	10.03	7.91	8.04
β-carotin - epoxid	2.02	9.87	2.38	3.24
Capsanthin - zeaxanthin	6.91	27.63	5.01	17.19
β-carotin	32.59	101.35	15.35	32.34
Other carotenoids				
Total carotenoids	254.55	690.15	210.61	493.94

According to the results for the content of carotenoids in peppers, presented in Table 2, it can be concluded that the content of total carotenoids and of the most dominant carotenoids were higher in the variety *horgosh*, in fresh pepper 690.15 mg/100 g and in dried pepper 493.94 mg/100 g, compared to fresh pepper 254.55 mg/100 g and in dried pepper 210.61 mg/100 g of the variety *kurtovska kapija*. In terms of the average value of total carotenoids of varieties it can be concluded that higher values were determined for the variety *horgosh*, which is statistically significant different in terms of the variety *kurtovska kapija*.

As the most common carotenoids with higher values are: β-carotene, in the variety *kurtovska kapija*, represented with 32.59 mg/100 g in fresh and 15.35 mg/100 g in dried peppers, and in the variety in *horgosh* is represented by 101.35 mg/100 g in fresh and 32.34 mg/100 g in the dried pepper; capsathin, in the variety *kurtovska kapija* is represented with 13.32 mg/100 g in fresh and 15.91 mg/100 g in dried peppers, and in the variety *horgosh* is represented with 59.18 mg/100 g in fresh and 43.66 mg/100 g in the dried pepper; zeaxanthin in the variety *kurtovska kapija* is represented with 3.54 mg/100 g in fresh and 7.91 mg/100 g in dried peppers, and in the variety *horgosh* is represented with 10.03 mg/100 g in fresh and 8.04 mg/100 g in the dried pepper; capsanthin - zeaxanthin in variety *kurtovska kapija* is represented with 6.91 mg/100 g in fresh and 5,01 mg / 100 g in the dried pepper and in the variety *horgosh* is represented with 27.63 mg/100 g in fresh 17.19 mg / 100 g in the dried pepper.

Based on the results it can be concluded that the highest average values for most carotenoids were in the peppers variety *horgosh*, that represent their varietal characteristic, for which this pepper is usually used as a spicy pepper, for obtaining the milled red pepper. High average content of carotenoids in dried peppers is due to the high concentration of dry matter.

4. CONCLUSION

Based on the results obtained from this research it can be concluded that the variety *horgos* was characterized with higher values of estimated chemical components, as in fresh peppers, as well in dried peppers. Also, this variety has higher sensorial grades in dried products in comparison with the variety *kurtovska kapija*.

In terms of color matters or total carotenoids it was showed that in both varieties there was reduction of the content of carotenoids in the dried peppers, due to their sensitivity to high temperature, light and oxygen in the implementation phases of the technological process.

In applying the technology of drying, for obtaining a quality product, of particular importance is the usage of quality raw material and the proper conduct of the technological process, which would avoid any discrepancies in terms of legislation and in terms of sensor characteristics. During the research we found that both varieties *kurtovska kapija* and *horgosh* can be used for drying. Obtained products comply with the quality provided under national regulations. For both varieties applied technology of drying were performed under different conditions (temperature and time). Actually, for the variety *kurtovska kapija* time of drying was longer, until obtaining the prescribed allowable water content. That is due to the thickness of pericarp of the variety *kurtovska kapija* in terms of the variety *horgosh*, so for the variety *kurtovska kapija* takes longer time to dry, which may affect the economic viability of the final product.

During the research it was determined that there is little available data from the R. of Macedonia for the quality characteristics of the peppers varieties grown in our manufacturing regions, included their mechanical, sensorial and chemical properties as their varietal characteristics. This is especially important for those varieties which are traditionally grown in our country, so they can receive the appropriate geographical features. Also, it can be emphasized that sensorial evaluation has a major impact on the general quality of final products. In R. of Macedonia there is a lacks of sensorial evaluation in the sector of processing of vegetables, which would be performed by appropriately trained experts in that field. According to this statement could be recommended performing a sensorial

analysis of all processed vegetable as an integral part of the overall analysis of the quality of final products.

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