

## Sensory characteristics of two parsley (*Petroselinum sativum* ssp. *crispum* L.) cultivars depending on storage conditions

MONIKA SITAREK<sup>1</sup>, JADWIGA RADZANOWSKA<sup>1</sup>, JOLANTA WTULICH<sup>1</sup>,  
JAKUB DOBRZYŃSKI<sup>2</sup>, MAREK GAJEWSKI<sup>1</sup>

<sup>1</sup>Department of Vegetable and Medicinal Plants, Warsaw University of Life Sciences – SGGW

<sup>2</sup>Department of Microbial Biology, Warsaw University of Life Sciences – SGGW

**Abstract:** *Sensory characteristics of two parsley (Petroselinum sativum ssp. crispum L.) cultivars depending on storage conditions.* A study was made of the sensory quality (odour and flavour) of two cultivars of leafy type parsley (*Petroselinum sativum* ssp. *crispum* L.) before and after storage. The experimental factors were: storage period (7 and 14 days), storage temperature (0°C and 10°C) and type of packaging (bunches placed in water and two types of modified atmosphere packaging – retail- and bulk-type). Two parsley cultivars ('Rialto' and 'Petra') with different morphology were investigated. The plants were harvested in autumn (September). The sensory quality of the parsley leaves was evaluated with Quantitative Descriptive Analysis (QDA). To describe the sensory quality, 26 attributes (13 for odour and 13 for flavour) were selected by a panel of experts. The results of the experiment showed that the tested cultivars differed in sensory attributes depending on storage conditions. The lower storage temperature helped maintain the freshness of both cultivars. Leaves stored for 14 days had less intensive odour and flavour. An increase in "foreign" odour and "earthy" flavour intensity with prolonged storage was observed for both cultivars. More differences were recorded in relation to odour than flavour descriptors.

*Key words:* leafy vegetables, modified atmosphere, packaging, odour, flavour, Quantitative Descriptive Analysis

\* e-mail: monika\_sitarek@sggw.pl

## INTRODUCTION

Parsley (*Petroselinum sativum* ssp. *crispum* L.) is an important vegetable plant and spice. Its fresh and dried leaves are commonly used in cooking. The characteristic aroma and taste of parsley leaves is mainly due to volatile compounds (located in the oil ducts), which are released during mechanical damage to the tissue (e.g. cutting, chewing). Due to the high respiration and transpiration rates, fresh parsley leaves have low storage ability. They can be stored at temperatures of 18–20°C, at 85–90% relative humidity (RH), for about 3 days. Parsley leaves keep well at 0°C if high humidity is applied. As with all leafy vegetables, the temperature of parsley leaves after harvesting must be lowered rapidly to reduce respiration and spoilage. It has been shown that storage at 0°C and 84% RH doubled the shelf life of parsley compared with storage at room temperature [Azeez and Parthasarathy 2008]. Parsley is usually handled in small lots and shipped in mixed loads with other commodities. The period between harvesting and reaching the final consumer can last from a few days to

more than a week. Consumer demand for quality and ease of use of vegetables is increasing. This creates a need to seek better postharvest treatment, including washing, packaging and ensuring appropriate conditions for storage, so that the product reaching the consumer is not only visually appealing and free of diseases, but also offers the appropriate flavour and aroma. After harvesting, parsley is usually hydro- or vacuum-cooled, and top- or package-icing is applied before shipment to maintain its crispness [Hunt Ashby 2008]. Moreover, in order to prevent moisture loss, yellowing and decay, Modified Atmosphere Packaging (MAP) may be used. MAP reduces loss of moisture and decreases the respiration process because of selective permeability to gases. Natural respiration of vegetables lowers the internal oxygen concentration, which results in an increase in the carbon dioxide concentration. As the oxygen concentration declines, the vegetable's respiration rate decreases until equilibrium is reached, at which point the rate of oxygen uptake and carbon dioxide production by the produce in the bag equals the oxygen and carbon dioxide permeability of the bag. However, under certain gas compositions, anaerobic respiration gives rise to 'off flavours' [Aharoni et al. 1989, Tudela et al. 2013]. Storage period and temperature also affect the sensory quality with variable intensity.

Several types of analyses are available for sensory assessment of vegetable products. In order to identify quality degradation due to storage, sensory descriptive analyses are used. These tech-

niques identify, describe and quantify the visual, tactile, auditory, olfactory and taste characteristics of the product. In the evaluation of the storage ability of vegetables it is impossible to maintain an unchanged control, and so the descriptive technique is particularly useful. Quantitative Descriptive Analysis (QDA) characterizes the sensory quality of the product as a complex of many particular characteristics (traits), individually evaluated for their intensity. The examination involves obtaining representative samples and providing them for initial assessment, then storing at specified conditions, which are continuously controlled. At certain intervals, samples are re-evaluated and the results are compared. This allows the quantitative and qualitative characterization of potential changes occurring in a sample after storage [Murray et al. 2001].

The aim of the study was to investigate the effect of temperature, storage period and packaging type on the sensory quality of leaves of two cultivars of leafy parsley, to find the best method for storing the plant material.

## MATERIAL AND METHODS

The experiment was carried out during the 2014 vegetation season. Seeds of two leafy type parsley cultivars ('Rialto' and 'Petra') were sown in the experimental field of the Department of Vegetable and Medicinal Plants in Wilanów, Warsaw, in heavy alluvial soil in mid-March. The parsley cultivars differed in the morphology of their usable parts ('Rialto' with flat lamina, and 'Petra' with triple curled lamina). Seeds were

sown by hand on a flat surface, with a spacing of 15 × 40 cm. Fertilizers were applied in standard doses, according to soil analysis results. During vegetation, manual weeding was performed several times, as well as constant watering. The research material was collected at the beginning of September, 50 days after the first harvest, at the maturity optimal for the fresh market. Leaves were immediately transported to the laboratory, washed in cold tap water, air-dried and stored for 7 or 14 days, using three types of packaging: bunch (200 g ±10 g each) immersed in water, retail MAP packaging (200 g ±10 g each), and bulk MAP packaging (900 g ±10 g each). Samples were stored at temperatures of 0°C and 10°C, in a cold room with 80% RH.

Sensory evaluation was carried out at the laboratory of the Department of Vegetable and Medicinal Plants of the Warsaw University of Life Sciences – SGGW equipped according to the ISO standard [PN-ISO-8589:1998]. Quantitative Descriptive Analysis was used for sensory quality analysis [PN-ISO-6564:1999]. A panel of 10 experts, previously trained according to the ISO standard [PN-ISO-8586-2:1996], carried out the analysis. The day before the evaluation, the experts received samples of parsley leaves and individually generated a set of descriptors for odour and flavour. Following discussion, 26 descriptors were chosen for the assessment (Tables 1 and 2). During the QDA evaluation, every assessor was given a set of randomized samples of the parsley leaves taken from each combination, in two independent sessions.

For odour evaluation, an equal part of chopped leaves was put into coded plastic boxes covered with lids. For flavour evaluation, 6 g of chopped parsley was evenly mixed with 100 g of standardized potato puree and divided into small portions in coded Petri dishes. The evaluation was performed in separate booths, equipped with computers for data acquisition. The intensity of each attribute

TABLE 1. Definitions of odour attributes used in the quantitative descriptive analysis

Odour attribute	Definition
Total odour intensity	a complex of odours perceptible after the repeal of the lid
Spicy-irritant	odour giving irritating sensation after the repeal of the lid, the smell of terpene
Parsley leaves	characteristic odour of fresh, chopped parsley leaves
Celery	characteristic smell of celeriac
Grassy	odour of freshly mown grass and wet plants
Sour	slightly sour smell typical of fermented products, e.g. yogurt
Seasoning (bouillon)	associated with lovage, aromatic broth
Herbal (bitter)	olfactory sensation felt while smelling herbs containing large amounts of tannins, alkaloids, "styptic" fragrance
Citrus	refreshing, characteristic citrus odour
Sweet	associated with sweet fruit odour
Earthy	fresh ground odour associated with raw beetroot or unwashed potatoes
Sulphuric	odour characteristic for brassica vegetables
Foreign	atypical for parsley leaves

TABLE 2. Definitions of flavour attributes used in the quantitative descriptive analysis

Flavour attribute	Definition
Parsley leaves	characteristic for fresh, chopped parsley leaves, terpene flavour
Celery	celeriac, parsley root flavour
Pungent "styptic"	scratching (astringency) sensation, such as when tasting a strong tart tea
Grassy	the impression of tasting green parts of plants
Sour	basic flavour
Herbal-seasoning	the impression of tasting mixed herbs such as lovage, herbes de Provence, thyme, marjoram
Spicy-burning	taste sensation felt in the mouth when trying a sample
Bitter	basic flavour
Salty	basic flavour
Sweet	basic flavour
Saponaceous	aroma/taste sensation associated with unflavoured soap, "bland" sample
Earthy	aroma/taste sensation associated with soil and tasting of unwashed root vegetables
Foreign	atypical for parsley leaves

was determined on a non-structural graphical scale showing the anchoring points (described as "undetectable" and "very intensive"). Results were converted into numerical values in a range of 0 to 10 units. Evaluation of flavour after 14 days of storage at 10°C was not performed due to the poor quality of certain storage combinations. STATISTICA 12 software (Statsoft) was used for statistical analysis of the results with ANOVA. Tukey's HSD (Honestly Significant Difference) test at the significance level  $\alpha = 0.05$  for comparison of means was ap-

plied. Analysis was performed separately for each cultivar. In order to compare storage variants (e.g. storage in bunches at 0°C for 7 days) one-way analysis of variance was used. To examine the effect of storage factors, three-way analysis of variance for odour and two-way analysis of variance for flavour was performed. The effect of temperature on flavour was determined on the basis of data obtained from 7-day storage. The effect of storage period on flavour was determined using data obtained from storage at 0°C.

## RESULTS AND DISCUSSION

There is little literature data concerning the sensory quality of fresh parsley leaves. Research often concerns the sensory attributes of parsley after various drying and freezing processes [Duden 1984, Mangkoltriluk et al. 2005, Lechtenberg et al. 2007].

Significant differences in odour attributes for both parsley cultivars were observed. Leaves of the 'Rialto' cultivar stored in bunches at 0°C for 7 and 14 days had significantly more sensible "total odour intensity" and "parsley leaves odour". In the case of "total odour intensity" they obtained scores of 6.72 and 6.73 respectively. In the case of "parsley leaves odour" they obtained scores of 5.93 and 6.34 respectively (Fig. 1a, c). The lowest scores for these descriptors were recorded for the leaves stored in retail MAP for 14 days at 10°C ("total odour intensity" 5.07, "parsley leaves odour" 3.62) (Fig. 2d). Other combinations for the 'Rialto' cultivar did not differ significantly (6.26–5.19) in the

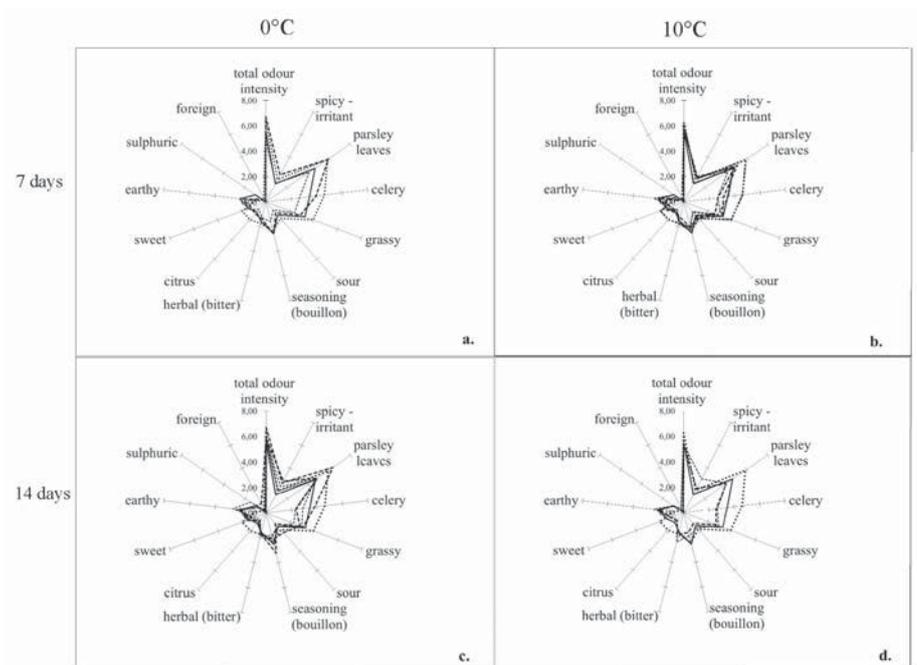


FIGURE 1. Odour attributes of 'Rialto' and 'Petra' cultivars before and after storage in bunches:   
 •••• before storage ('Rialto'), - - - after storage ('Rialto'), — before storage ('Petra'), - · - · after storage ('Petra')

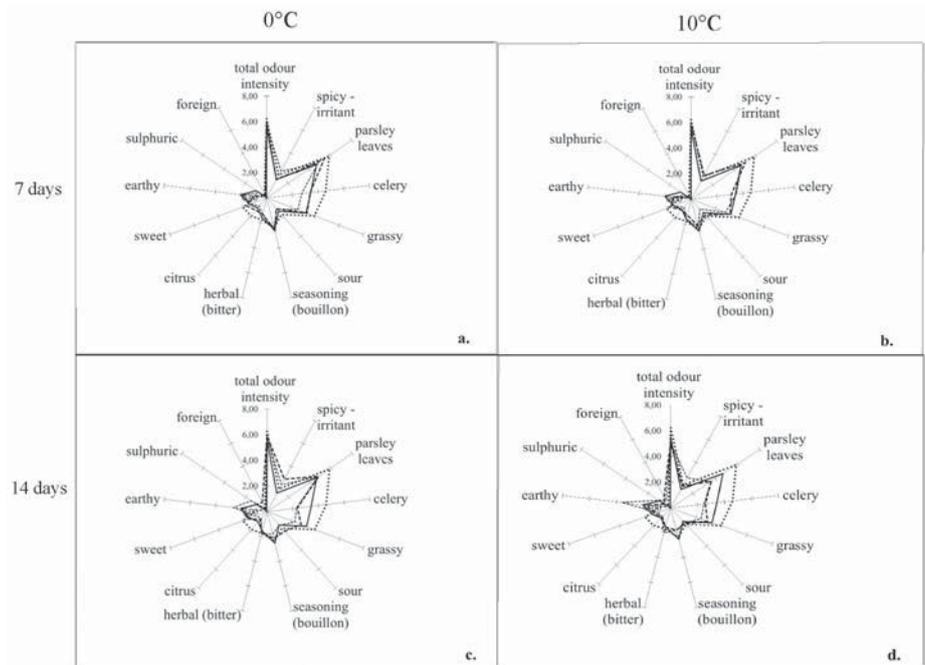


FIGURE 2. Odour attributes of 'Rialto' and 'Petra' cultivars before and after storage in retail MAP:   
 •••• before storage ('Rialto'), - - - after storage ('Rialto'), — before storage ('Petra'), - · - · after storage ('Petra')

case of “total odour intensity” and were various in the case of “parsley leaves odour” (4.04–5.40) (Figs 1b, d, 2a–c, 3). Moreover, the temperature and storage period were factors which significantly influenced the scores for “total odour intensity” and “parsley leaves odour” of ‘Rialto’ (Table 3). The intensity of these two odour attributes was the same for ‘Petra’ in all combinations (Figs 1–3). They were not significantly affected by the storage time or temperature (Table 4). The change in the intensity of “seasoning (bouillon)”, “sulphuric”, “celery” and “herbal (bitter)” odours under different storage conditions was a common feature of both cultivars. For ‘Rialto’, the intensity of “seasoning (bouillon)”

odour was significantly higher at 0°C than at 10°C. The intensity of this attribute was lower in the case of a longer storage period, amounting to 2.52 units after 7 days of storage and 2.09 units after 14 days. Storage of ‘Petra’ in bulk MAP resulted in maintenance of the odour of “seasoning (bouillon)” close to the baseline, while storing in bunches proved to be the least effective method. The “seasoning (bouillon)” odour was maintained best for ‘Petra’ leaves stored in bulk MAP for 14 days at 10°C (4.12) (Fig. 3d), while other storage variants resulted in much lower scores – from 2.75 (bulk MAP packaging at 0°C for 7 days) to 1.59 (bunch at 0°C for 7 days) (Figs 1, 2, 3a–c).

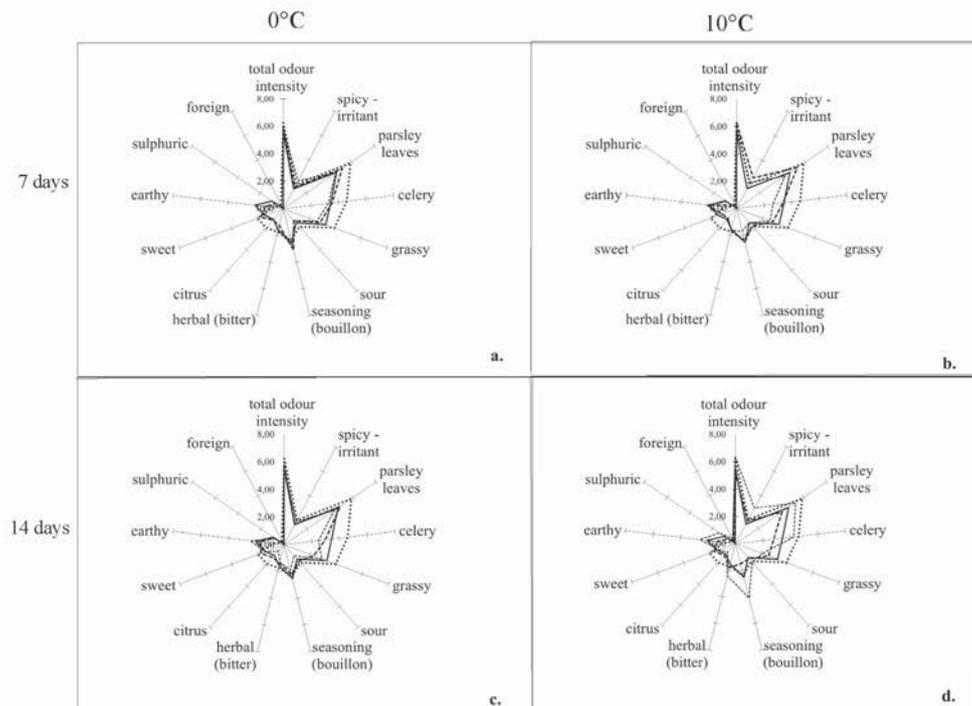


FIGURE 3. Odour attributes of ‘Rialto’ and ‘Petra’ cultivars before and after storage in bulk MAP: •••• before storage (‘Rialto’), – – – after storage (‘Rialto’), — before storage (‘Petra’), – · – · after storage (‘Petra’)

The best storage condition variants for samples of 'Petra' as regards "seasoning (bouillon)" aroma were the worst for 'Rialto'. This phenomenon may be due to cultivar differences. Differences between parsley cultivars were reported by Urlich et al. [2011], who investigated sixteen different genotypes of parsley, including two cultivars, six populations and eight inbred lines, regarding their sensory characteristics in relation to volatile patterns and resistance to *Septoria petroselini*. They found that more resistant genotypes were characterized by such sensory traits as "bitter", "grassy", "herbaceous", "pungent", "chemical", and "harsh" tastes. The odour profile of both tested cultivars before storage

differed. 'Rialto' was characterized by more intensive "total odour intensity", as well as odour of "parsley leaves" and "citrus". 'Petra' was described as more "earthy" than 'Rialto' shortly after harvesting. The influence of storage factors on individual sensory traits of parsley should be further examined, since the effects of storage may be modified due to the interaction of such factors as temperature, storage period and type of packaging. The effect of the interaction of all experimental factors was significant in the case of 'Petra' for "seasoning (bouillon)", "parsley leaves" and "celery" odours (Table 4). For 'Rialto' such relationships did not occur (Table 3).

TABLE 3. The influence of experimental factors on odour attributes of 'Rialto'

Odour attribute	Experimental factor						
	type of packaging	storage time	storage temperature	type of packaging × storage time	type of packaging × storage temperature	storage time × storage temperature	type of packaging × storage time × storage temperature
Total odour intensity	ns	**	***	ns	*	*	ns
Spicy-irritant	ns	ns		ns	ns	*	ns
Parsley leaves	ns	**	***	ns	*	**	ns
Celery	ns	*	*	ns	*	ns	ns
Grassy	ns	ns	ns	ns	ns	ns	ns
Sour	ns	ns		ns	ns	*	ns
Seasoning (bouillon)	ns	**	***	ns	ns	ns	ns
Herbal (bitter)	ns	*	ns	ns	ns	ns	ns
Citrus	ns	ns	ns	ns	ns	ns	ns
Sweet	*	ns	ns	ns	ns	ns	ns
Earthy	ns	ns	ns	ns	ns	ns	ns
Sulphuric	ns	**	ns	ns	ns	ns	ns
Foreign	***	***	ns	***	ns	ns	ns

Note: ns – not significant, \*  $0.1 \geq p > 0.05$ , \*\*  $0.05 \geq p > 0.01$  \*\*\*,  $0.01 \geq p > 0.000$ .

TABLE 4. The influence of experimental factors on odour attributes of 'Petra'

Odour attribute	Experimental factor						
	type of packaging	storage time	storage temperature	type of packaging × storage time	type of packaging × storage temperature	storage time × storage temperature	type of packaging × storage time × storage temperature
Total odour intensity	ns	ns	Ns	ns	*	ns	ns
Spicy-irritant	ns	*	Ns	ns	ns	*	ns
Parsley leaves	ns	ns	Ns	ns	ns	ns	*
Celery	ns	ns	Ns	ns	ns	ns	**
Grassy	ns	ns	ns	ns	ns	ns	ns
Sour	ns	*	ns	ns	ns	ns	ns
Seasoning (bouillon)	***	ns	ns	**	ns	***	***
Herbal (bitter)	ns	***	***	ns	ns	ns	ns
Citrus	ns	ns	ns	ns	ns	ns	ns
Sweet	ns	ns	ns	ns	ns	ns	ns
Earthy	ns	***	ns	ns	ns	ns	ns
Sulphuric	ns	***	*	ns	*	ns	ns
Foreign	ns	***	*	ns	ns	**	ns

Note: For explanation of symbols see Table 3.

Higher temperature and extended storage period influenced negatively the "celery" odour of 'Rialto' leaves. 'Petra' leaves stored in bulk MAP at 10°C for 14 days were assessed as the best (4.12) (Fig. 3d). Other objects obtained scores ranging from 3.5 to 2.5 in this category.

The intensity of odour referred to as "sulphuric" increased with the length of storage time for both cultivars. The intensity for 'Rialto' increased from 0.47 after 7 days of storage to a score of 0.78 after 14 days. Similarly, the scores for 'Petra' increased from 0.062 to 1.070.

The appearance of a "foreign" odour ("off odour") was identified for both cultivars. 'Rialto' leaves stored in retail MAP showed the highest intensity of this

smell (0.52) compared with the other objects. For both cultivars an increase in "foreign" odour intensity was observed with prolonged storage duration. Moreover, it was significantly higher as a result of interaction of the time factor (14 days) with the type of packaging ('Rialto', retail MAP) and storage temperature ('Petra', 10°C). Despite the presence of a "foreign" odour for eight 'Rialto' storage variants, its value was at an insignificant level in the case of bunches stored at 10°C and for leaves stored in bulk MAP (0°C for 14 days and 10°C for 7 days) (Figs 1b, d, 3b, c). In another study a "fish-like" foreign odour was reported for stored frozen parsley [Duden and Hubner 1981].

For 'Petra', an increase in the intensity of "herbal (bitter)" odour was observed for extended storage period (from 1.54 to 1.96) and increased storage temperature (from 1.54 to 1.97). Leaves of this cultivar were also characterized by a significantly more intense "earthy" odour after 14-day storage. Duden [1984] reported a decrease in "freshness" and "grassy" aromas, as well as the predominance of "hay-like" aroma due to a prolonged storage period in an experiment where "curly" and "flat" parsley leaves were stored from 0 to 8 months at different temperatures (from  $-50$  to  $-12^{\circ}\text{C}$ ). The effect of freezing temperatures after 8 months' storage on the "grassy" and "hay-like" attributes showed the "hay-like" scores to increase consistently with temperature, while the "grassy" attribute remained unchanged at

$-18^{\circ}\text{C}$  and below, with a reduction only at  $-12^{\circ}\text{C}$ .

In our experiment, decreased storage temperature significantly influenced the intensity of the "herbal-seasoning" flavour for both cultivars (Tables 5, 6). Leaves of 'Rialto' kept at the lower temperature obtained an average score of 2.71 (Figs 4a, c, 5a, c, 6a, c), while those stored at  $10^{\circ}\text{C}$  scored 1.64 (Figs 4b, 5b, 6b). Similarly, 'Petra' leaves scored respectively 2.89 (Figs 4a, c, 5a, c, 6a, c) and 1.93 (Figs 4b, 5b, 6b). It is known that the decrease in "freshness" of parsley leaves correlates with the degradation of monoterpenes. Myrcene ("herbal", "metallic") and menthatriene ("parsley-like") are two important compounds within this category which have been identified as significant in fresh parsley, based on their "flavour dilution"

TABLE 5. The influence of experimental factors on flavour attributes of 'Rialto'

Flavour attribute	Experimental factor				
	type of packaging	storage time	storage temperature	type of packaging × storage time	type of packaging × storage temperature
Parsley leaves	ns	ns	ns	ns	ns
Celery	ns	ns	ns	ns	ns
Pungent "styptic"	ns	ns	ns	ns	ns
Grassy	ns	ns	ns	ns	ns
Sour	ns	*	ns	ns	ns
Herbal-seasoning	ns	ns	***	ns	ns
Spicy-burning	ns	ns	*	ns	ns
Bitter	ns	ns	ns	ns	ns
Salty	ns	ns	ns	ns	ns
Sweet	ns	ns	ns	ns	ns
Saponaceous	ns	ns	ns	ns	ns
Earthy	ns	**	ns	ns	ns
Foreign	ns	ns	ns	ns	ns

Note: For explanation of symbols see Table 3.

TABLE 6. The influence of experimental factors on flavour attributes of 'Petra'

Flavour attribute	Experimental factor				
	type of packaging	storage time	storage temperature	type of packaging × storage time	type of packaging × storage temperature
Parsley leaves	ns	*	ns	ns	ns
Celery	ns	**	ns	ns	ns
Pungent "styptic"	ns	ns	ns	ns	ns
Grassy	ns	ns	ns	ns	ns
Sour	ns	ns	**	ns	ns
Herbal-seasoning	ns	*	***	ns	ns
Spicy-burning	ns	ns	ns	ns	ns
Bitter	ns	ns	ns	ns	ns
Salty	ns	ns	ns	ns	ns
Sweet	ns	ns	ns	ns	ns
Saponaceous	ns	ns	ns	ns	ns
Earthy	ns	ns	ns	ns	ns
Foreign	ns	ns	ns	ns	ns

Note: For explanation of symbols see Table 3.

factor using aroma extraction dilution analysis (AEDA) [Jung et al. 1992].

The intensity of "herbal-seasoning" flavour was perceived differently depending on the storage combination of both cultivars. 'Petra' stored in a bunch for 7 days at 0°C obtained the highest scores (3.28), while stored in retail MAP for the same period at 10 °C it obtained the lowest scores (1.55) (Figs 4a, 5b). Other combinations received moderate evaluations (2.93–1.98) (Figs 4b–c; 5a, c, 6a–c). Moreover, the extended storage period influenced negatively the "herbal-seasoning", "parsley leaves" and "celery" flavours.

"Earthy" taste was detected to a greater degree in 'Rialto' leaves stored for 14 days (1.3) compared with 7-day storage (0.78), as was "sour" taste in 'Petra' leaves (1.72 for 14 days, 1.18 for

7 days). 'Rialto' was described as more "spicy-burning" when stored at 0°C.

For both cultivars, "foreign" flavour was not found in all storage variants. Duden [1984] observed the occurrence of "foreign" flavour in frozen parsley. The flavour was described as "hay-like" and "grassy". "Grassy" flavour was found only in frozen unblanched leaves and "hay-like" flavour was found in blanched and unblanched material.

Mangkoltriluk et al. [2005] found no flavour differences in parsley leaves depending on the processing method. In their survey, 70% of assessors were not able to identify the odd sample correctly out of samples of curled parsley leaves dried in two different conditions (samples were assessed using the triangle method – the odd coded sample is compared with two identical coded ref-

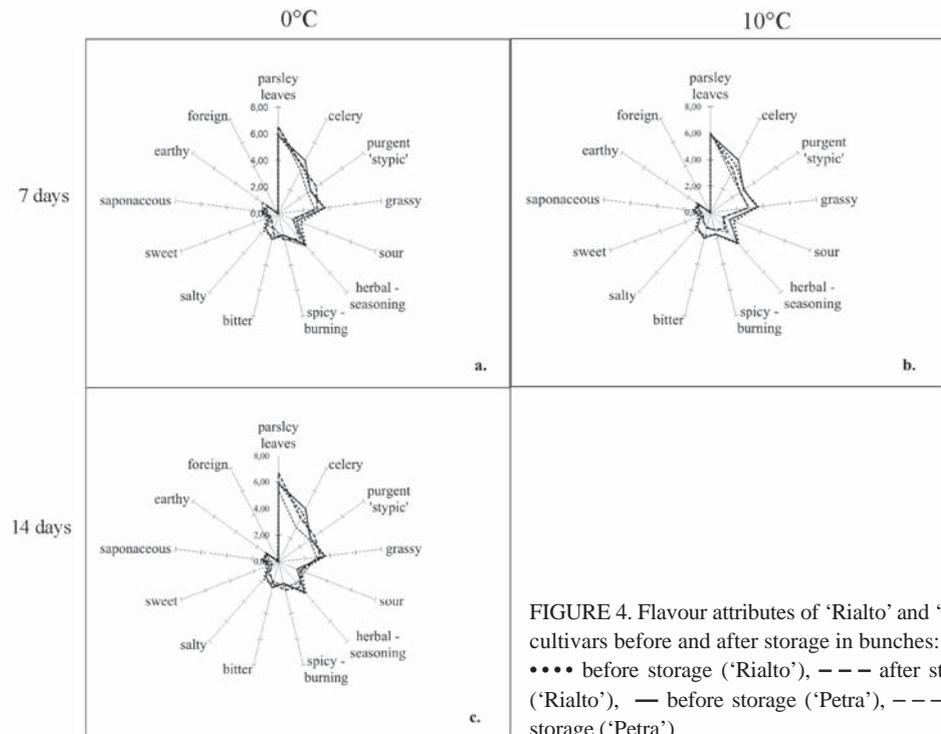


FIGURE 4. Flavour attributes of 'Rialto' and 'Petra' cultivars before and after storage in bunches: **••••** before storage ('Rialto'), **----** after storage ('Rialto'), **—** before storage ('Petra'), **- - - -** after storage ('Petra')

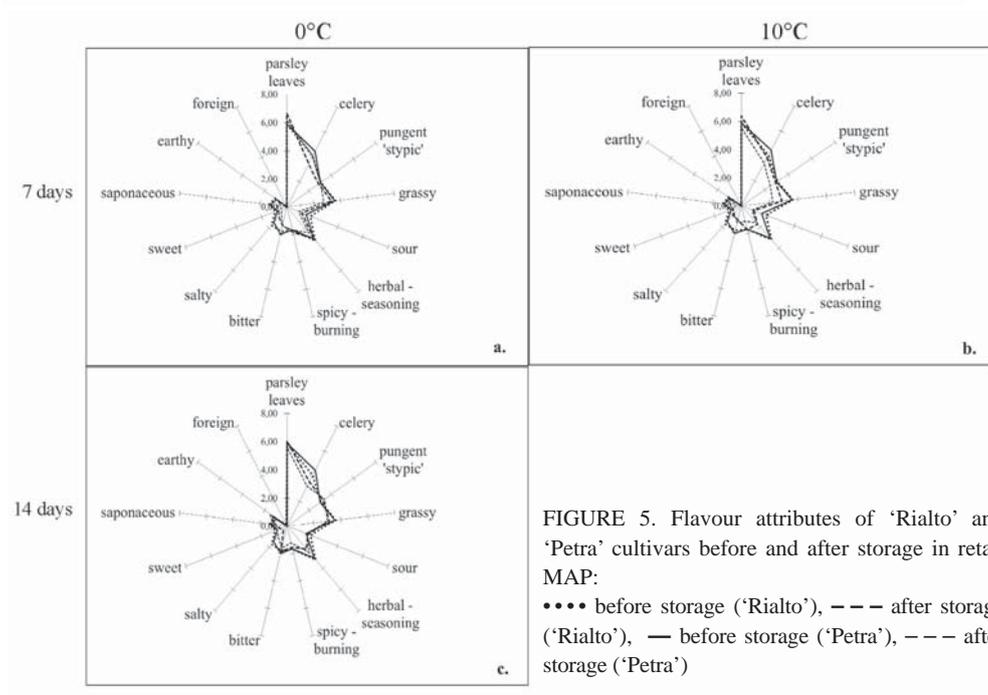


FIGURE 5. Flavour attributes of 'Rialto' and 'Petra' cultivars before and after storage in retail MAP: **••••** before storage ('Rialto'), **----** after storage ('Rialto'), **—** before storage ('Petra'), **- - - -** after storage ('Petra')

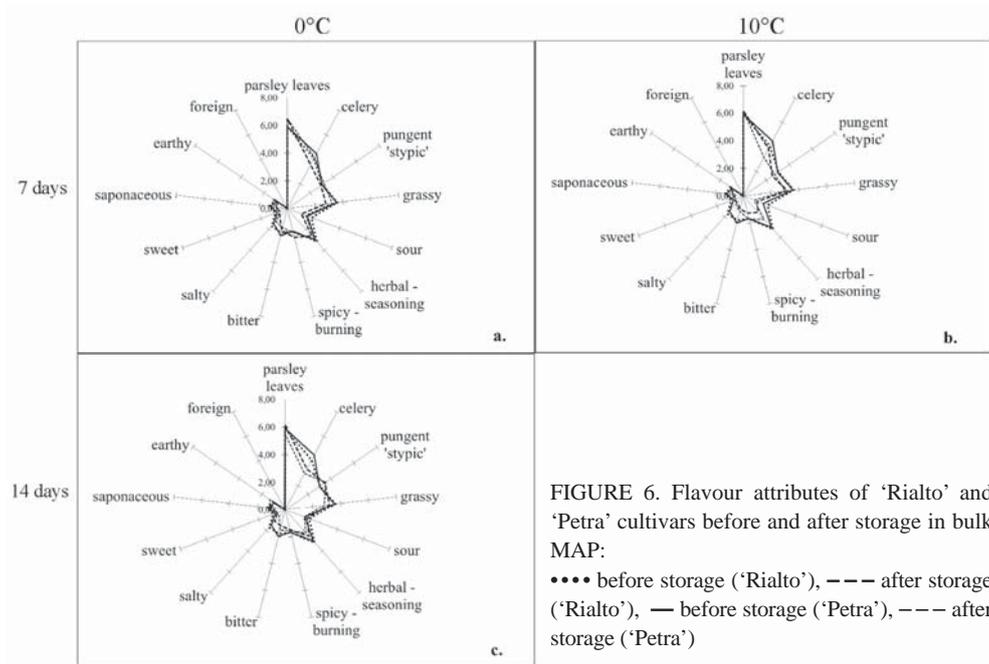


FIGURE 6. Flavour attributes of 'Rialto' and 'Petra' cultivars before and after storage in bulk MAP:

•••• before storage ('Rialto'), --- after storage ('Rialto'), — before storage ('Petra'), --- after storage ('Petra')

erence samples), although chemical differences in volatiles concentration were found in the samples. Lechtenberg et al. [2007] examined the sensory attributes of parsley leaves after different drying methods. They found that freeze-dried material had a more intense green colour and had more "fresh" aroma, whereas the oven-dried material gave the optical impression of a slightly greyish colour and had a non-intense sensory impact.

## CONCLUSIONS

Lower initial intensity of "total odour" and "parsley leaves" odour of parsley results in smaller changes in the sensory traits of the plant material during storage, while more aromatic parsley leaves

may be more susceptible to loss of these sensory values.

Storage in retail MAP results in lower "total odour" intensity and "parsley leaves" odour intensity, whereas leaves stored in bunches can be kept up to 14 days at 0°C without large degradation of these attributes.

The intensity of "sulphuric" and "foreign" odours increases during the storage period for both cultivars tested. Storage of more aromatic cultivars, such as 'Rialto', in retail MAP conditions stimulates the occurrence of 'foreign' odour.

The intensity of "herbal-seasoning" flavour decreases during the storage period, while "earthy" flavour ('Rialto') and "sour" flavour ('Petra') increase in intensity.

Packaging type is important with regard to the possibility of occurrence of “foreign” odour. It can be stated that the storage of more aromatic cultivars in retail MAP for 14 days at 10°C cannot be applied for that reason.

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**Streszczenie:** Ocena sensoryczna liści dwóch odmian pietruszki naciowej (*Petroselinum sativum* ssp. *crispum* L.) w zależności od warunków przechowywania. Badano jakość sensoryczną (smak i zapach) dwóch odmian pietruszki naciowej przed przechowywaniem i po przechowywaniu. Czynnikiem doświadczenia były czas przechowywania (7 i 14 dni), temperatura przechowywania (0°C i 10°C) oraz typ opakowania (pęczki zanurzone ogonkami w wodzie, opakowania jednostkowe i opakowania zbiorcze modyfikujące atmosferę). Doświadczeniem objęto odmiany ‘Rialto’ i ‘Petra’ o zróżnicowanej morfologii. Zbiór roślin przeprowadzono w terminie jesiennym (wrzesień). Jakość sensoryczną liści pietruszki naciowej oceniano metodą ilościowej analizy opisowej (QDA). Do opisu sensorycznych cech jakościowych zastosowano łącznie 26 wyróżników (13 dla zapachu i 13 dla smaku) wytypowanych przez zespół ekspertów. Wyniki doświadczenia wykazały, że badane odmiany różniły się pod względem badanych wyróżników sensorycznych w zależności od warunków przechowywania. Obniżona temperatura przechowywania sprzyjała zachowaniu świeżości naci obu odmian. Liście przechowywane przez okres 14 dni charakteryzowały się mniejszym nasileniem aromatu i smaku. Wraz z wydłużeniem okresu przechowywania odnotowano zwiększone odczuwanie zapachu „obcego” i smaku „ziemistego”. Więcej różnic zaobserwowano dla wyróżników zapachu naci.