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POSTHARVEST SENSORY AND PHENOLIC CHARACTERIZATION OF 'ELEGANT LADY' AND 'CARSON' PEACHES

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High quality fruits are increasingly demanded along with the need to ensure this attribute to consumers. Thus, this study was aimed at characterizing a melting ('Elegant Lady') and a non-melting flesh ('Carson') peach (*Prunus persica* (L.) Batsch) varieties by considering both their bioactive compound contribution and their sensory quality in ripe fruit at harvest and after a prolonged period of cold storage. Cultivars were evaluated at harvest (F0) and after 30 d of cold storage (F30), as well as after a maturation period at 20 °C for both F0 and F30 (R0 and R30, respectively). Fruit weight, flesh firmness, soluble solid content (SSC), titratable acidity (TA), and background color (Hue) were recorded at each stage. Furthermore, total phenol content was measured and a phenolic characterization by HPLC (High-Performance Liquid Chromatography) was performed for both varieties to detect the major low molecular weight phenolic compounds present in the fruit. Finally, a trained panel assessed the main sensorial parameters at R0 and R30. Total phenol content did not change significantly as a result of cold storage and differences were probably attributed only to genotype. Low molecular weight phenolic compounds were detected in 'Elegant Lady' and 'Carson', 15 and 12, respectively; (+)-catechin was the major compound found in both cultivars, but in higher concentrations in 'Elegant Lady'. In the phenolic characterization, 'Elegant Lady' was observed more closely than 'Carson' for flavonoids. After 30 d of cold storage, 'Elegant Lady' was unacceptable for consumption due to the appearance of physiological disorders such as wooliness while 'Carson' showed a mean score within the acceptability range.

Key words: Quality parameters, sensory evaluation, total phenols, (+)-catechin, HPLC.

At the same time as the market for fresh products grows steadily, the need to ensure quality increases. High-quality fruits are increasingly demanded, especially from the new export markets (Ruiz-Altisent *et al*., 2006). Consumers complain about the poor flavor and texture of fresh peaches (*Prunus persica* (L.) Batsch), as well as the symptoms of chilling injury, wooliness, and flesh browning (Crisosto *et al*., 2006). In order to increase the acceptability of peaches, breeders are developing new varieties, and this involves making positive changes in their sensory characteristics (Crisosto *et al*., 2006). The fact that sensory requirements are perceived make them an important way for products to interact with consumers (Peri, 2006). Sensory-based techniques are being used to support breeding and testing new cultivars, along with new storage practices. The fruit quality concept based only on external appearance and sweetness is obsolete. The strength of sensory evaluation allows providing a complete fruit profile that is valid for product comparison, shelf-life monitoring, and the prediction of consumer acceptance. This approach allows weighing single parameters in terms of influence on overall perception (Infante *et al*., 2008a).

Peach fruit flesh is usually classified as melting (MF) or non-melting (NMF). Melting fruit are common peaches for fresh consumption, which lose flesh firmness rapidly during ripening, whereas NMF fruit are suitable for processing. Mature peaches of both MF and NMF types produce ethylene during ripening. The MF type is characterized by rapid fruit flesh softening while NMF is characterized by a more limited softening (Bailey and French, 1932). The characteristic soft texture of MF peaches is highly valued by consumers (Hayama *et al*., 2008).

Chilling injury (CI), considered to be one of the most important symptoms affecting sensory characteristics in peaches, is a physiological disorder affecting stone fruit stored for long periods in cold storage. CI symptoms are expressed during ripening, usually when fruit reach consumers. The phenotypic expression of this disorder is flesh mealiness (a dry flesh with grainy sand-like texture), brown or red flesh discoloration, and lack of flavor (Lurie and Crisosto, 2005).

Phenolic compounds are those that are the most common in fruits and have a strong antioxidant capacity (Scalzo *et al*., 2005). These compounds can protect foods from oxidative deterioration in low concentrations and can take part in modifying the food's coloring at high

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concentrations because some of them are substrates for undesirable browning reactions, which are catalyzed by the polyphenol oxidase (PPO) enzyme. Thus, varieties that have a balance of high phenolic compound content and low PPO activity can be very attractive (Chang *et al*., 2000). Moreover, astringency and tartness are also related to the phenolic compound concentration (Shahidi and Naczk, 1996) that is important to remember when assessing a variety's sensory quality.

The nutritional component is extremely important in fresh fruit, and there is growing interest in the "health-giving" properties of some foods based on the observation that their regular consumption has beneficial effects on health by strengthening the body's defenses against a number of chronic diseases (Peri, 2006). Substances with a positive effect on health are increasingly important in defining fruit quality. Antioxidants, such as phenolics, thiols, carotenoids, and tocopherols, which can protect the human body from reactive oxygen species that are responsible for chronic diseases, are present in peaches and could be considered as part of the variety's intrinsic value (Dalla Valle *et al*., 2007). Hence the selection of peaches with high phenolic concentrations and enhanced antioxidant, antimicrobial, and colorant properties would be a first step to develop new varieties with better functional properties (Cevallos-Casals *et al*., 2006).

This study seeks to characterize two peach varieties from the point of view of their bioactive compound contribution and sensory quality after a long storage period. This information can be useful in guiding the acquisition of new varieties that are rich in bioactive compounds or in defining new uses for these varieties.

MATERIALS AND METHODS

Plant material

Fruits were harvested from 7-yr-old trees of each cultivar, trained as open vase, and grown in the germplasm collection located in Chile's Central Valley. Fruits were picked when their ground color was green-yellow and transferred immediately to the laboratory. Instrumental evaluations were performed at four different developmental stages: at harvest (F0), after 30 d of cold storage (F30), and after a maturation period at 20 °C for both F0 and F30 (R0 and R30, respectively). Fruit ripeness established at 1-2 kgf (Crisosto, 2006; Infante *et al*., 2008b) was reached after fruits were kept for a maximum of 3 d at 20 ºC.

Quality parameter

Weight (g) was determined with a precision electronic balance (Tech Masters, California, USA). Flesh firmness was determined with a fruit pressure tester with a 7.9 mm diameter plunger (Effegi FT-327, Milan, Italy) at two opposite points on the fruit's equator. The soluble solid content (SSC) was measured with a temperature-compensated ATC PAL-1 refractometer (Atago, Tokyo, Japan). Titratable acidity (TA) was assessed by titration of 10 mL juice from a sample made up of five fruits with 0.1 N NaOH until the organic acids were neutralized at pH 8.2-8.3 with an automatic Titroline Easy titrator (Schott, Mainz, Germany). Results were expressed as a percentage of malic acid.

Ground color was measured with a CR-300 portable tri stimulus colorimeter (Minolta, Osaka, Japan) with illuminant D_{65}, 2º observation angle, and by the CIELab system. In addition, the values of a* (green/red axis component) and b* (yellow/blue axis component) were transformed to Hue values [$Hue = \tan^{-1}(b^*/a^*)$].

Phenolic characterization

Total phenols were determined by spectrophotometric analysis on F0, R0, F30, and R30. Fifty grams of skinless flesh were macerated in 125 mL of 80% methanol with a titrator for 2 min and homogenized for 1 h. This homogenate was then centrifuged for 30 min at 5300 g and the resulting solution was micro-filtered (0.45 μm; 47 mm diameter Durapore polyvinylidene fluoride membrane, Milipore, San Paulo, Brazil) through a vacuum pump, then 1 mL was taken from the sample and diluted in 20 mL with distilled water. This sample was placed in a spectrophotometer and absorbance at 280 nm was observed (García-Barceló, 1990).

Low molecular weight phenolic compounds were determined by high performance liquid chromatography (HPLC). Fifty milliliters of the sample for measuring total phenols was concentrated to half volume (25 mL) with a rotary evaporator at 35 °C. Distilled water was added to the concentrated sample up to 50 mL, and the diluted sample was then extracted three times with 20 mL 100% (v/v) ethyl ether and three times with 20 mL 100% (v/v) ethyl acetate. To ensure the absence of any water, 30 g of sodium sulfate (Na_2SO_4) was added and left for 30 min. The extract was then filtered with a qualitative filter paper (125 mm, Toyo Roshi Kaisha, Tokyo, Japan). The ether fraction (60 mL) was concentrated to dryness in a rotary evaporator and then rehydrated with 2 mL 50% v/v methanol. The resulting solution was micro-filtered (0.22 μm; 13 mm diameter Durapore polyvinylidene fluoride membrane, Millipore, San Paulo, Brazil). Fifty microliters of the filtrate were injected into a chromatograph (Agilent 1100 Series, Merck-Hitachi, Darmstadt, Germany) equipped with a Model L-6200 pump, Model L-7200 automatic injector, aligned photodiode detector (Model L-7455), and a Waters Nova pack C18 (4 μm; 3.9 mm × 300 mm column).

Sensory evaluations

A quantitative descriptive analysis was carried out on R0 and R30. Evaluations were performed on individual booths by a trained panel. Samples were prepared on white pottery dishes by presenting a slice of ¼ fruit with skin. They were cut and prepared less than 5 min before testing

to ensure a glossy aspect and avoid flesh browning. The dish containing the sample was marked by a randomly assigned 3-digit code, which corresponded to the same code shown on a separate evaluation guideline. The evaluation guidelines considered a continuous scale for each attribute that ranged from 0 to 15 and marked with three anchors: 0 = the lowest level for that specific attribute; 7.5 = medium level for that specific attribute; and 15 = the highest level for that specific attribute, all of which had already been employed for stone fruit quality evaluation (Infante *et al*., 2008c). The evaluated quality attributes were: aroma, sweetness, acid taste, juiciness, texture, and flavor.

Acceptability was determined through a consumer test. The evaluation guideline for acceptability considered a hedonic scale marked with two anchors: 0 = dislike extremely; and 15 = like extremely. The percentage of acceptance was calculated as the number of assessors liking the sample or who were over the indifference zone (6.5-8.5) divided by the total number of assessors tasting the sample (Lawless and Heymann, 1998).

Experimental design and statistical analysis

The design was completely randomized with a 2 × 4 factorial structure (varieties × storage time) and considered 15 replicates for quality parameter characterization. Normality and homogeneity of variance were tested, and a parametric ANOVA with 5% significance was conducted in those cases where the assumptions were found; the Student Newman Keuls test (SNK) for multiple comparisons was calculated for means separation where significant differences were found between treatments. In those cases where assumptions were not observed, a non-parametric ANOVA by the Kruskal-Wallis test at 5% significance was performed.

For sensory evaluation and phenolic characterization using HPLC, a principal component analysis (PCA) was performed as well as a cluster analysis. Three replicates of five fruits each were evaluated for the phenolic characterization. One fruit was considered to be the experimental unit for the sensory evaluation, which had 12 replicates for the trained panel and 36 for the consumer test (Balzarini *et al*., 1990).

RESULTS AND DISCUSSION

Firm fruit evaluation

Fruit characterization at harvest. No differences in flesh firmness were observed at harvest between both varieties. The SSC reached more than 12% for both varieties, and no differences were detected. A lower TA score was observed in 'Carson' as compared to 'Elegant Lady'; however, both varieties showed less than 1% TA. The SSC:TA ratio was lower in 'Elegant Lady' than in 'Carson' because the first exhibited the highest TA (Table 1).

Differences were observed in the ground color; the lowest hue values were shown by the MF 'Elegant Lady' due to a predominantly red color while yellow predominated in the NMF 'Carson' (Table 1). It has already been reported that differences between MF and NMF peaches regarding skin hue values showed much lower values for MF peaches characterized by reddish skin (Karakurt *et al*., 2000).

Table 1. Quality parameters on firm 'Elegant Lady' and 'Carson' peaches evaluated immediately after harvest (F0) and after 30 d at 0 ºC (F30).

		Firmness	SSC	TA	SSC:TA	Hue
		kgf	—— % ——			
Variety (V)	'Elegant Lady'	5.39a	13.13b	0.64b	22.32a	43.62a
	'Carson'	5.49a	11.85a	0.48a	27.67b	86.64b
Storage time (T)	F0	6.26b	12.42a	0.72b	17.56a	63.43a
	F30	4.63a	12.56a	0.40a	32.44b	66.82a
V × T	'Elegant Lady' × F0	6.46b	12.83ab	0.80d	16.19a	44.52a
	'Carson' × F0	6.05b	12.01a	0.63c	18.92b	82.35b
	'Elegant Lady' × F30	4.32a	13.43b	0.48b	28.45c	42.72a
	'Carson' × F30	4.93a	11.69a	0.32a	36.42d	90.92c
Significance						
V		ns	*	*	*	*
T		*	ns	*	*	ns
V × T		*	*	*	*	*

SSC: soluble solid content, TA: titratable acidity.
Different letters in the same column indicate differences according to SNK test ($P < 0.05$).
ns: non significant.

Fruit characterization after cold storage. There was an interaction between the evaluation period and variety regarding flesh firmness. The values observed after 30 d of storage were lower than those observed at harvest, 6.26 and 4.63 kgf, respectively. For SSC, differences between varieties were observed with 'Elegant Lady' exhibiting the highest content (13.43%) while 11.43% was observed in 'Carson' (Table 1). On the other hand, 'Carson' showed a lower TA, which has already been reported for NMF peach varieties (Brovelli *et al*., 1999). After 30 d of cold storage, both varieties showed a drop in TA as a consequence of fruit respiration during postharvest (Bron *et al*., 2002). For the SSC:TA ratio, an interaction between factors was observed and values ranged between 16.19 and 36.42.

Differences at harvest were observed in the ground color parameter Hue. It was also observed in the interaction that, independently of the evaluation period, 'Elegant Lady' showed more reddish skin color than 'Carson'.

Ripe fruit evaluation

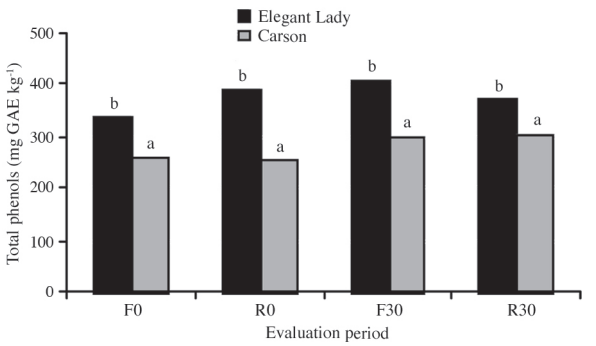
'Elegant Lady' flesh firmness was less than for 'Carson' with values of 1.05 and 2.60 kgf, respectively (Table 2). 'Carson' is an NMF variety that is characterized for having firmer flesh (Lester *et al*., 1996). An interaction with the evaluation period was also observed: 'Elegant Lady' reached less firmness after 30 d. Regarding SSC, what had been observed after cold storage was supported with 'Elegant Lady' exhibiting higher SSC than 'Carson'. The peach's SSC depends mainly on variety, harvest date, location, and season (Ruiz-Altisent *et al*., 2006). As for TA, the same results for ripe fruits were observed in firm fruits with 'Carson' exhibiting a lower TA than 'Elegant Lady'.

Table 2. Quality parameters of ripe 'Elegant Lady' and 'Carson' peaches evaluated on fruits not submitted to cold storage (R0) and ripe fruit stored 30 days at 0ºC (R30).

		Firmness	SSC	TA	SSC:TA	Hue
		kgf	—— % ——			
Variety (V)	'Elegant Lady'	1.05a	12.85b	0.50b	26.03a	47.42a
	'Carson'	2.60b	10.76a	0.32a	35.03b	84.34b
Storage time (T)	R0	1.69a	12.04a	0.40a	32.89a	65.65a
	R30	1.96a	11.58a	0.41a	28.17b	66.12a
V × T	'Elegant Lady' × R0	1.45b	13.03b	0.54d	24.36a	48.22a
	'Carson' × R0	1.94c	11.04a	0.27a	41.42c	83.07a
	'Elegant Lady' × R30	0.65a	12.67b	0.46c	27.69b	46.62a
	'Carson' × R30	3.26d	10.48a	0.37b	28.65b	85.61a
Significance						
V		*	*	*	*	*
T		ns	ns	ns	*	ns
V × T		*	*	*	*	ns

SSC: soluble solid content, TA: titratable acidity.
Different letters in the same column indicate differences according to SNK test ($P < 0.05$). ns: non significant.

Total phenols. 'Elegant Lady' (338.56 and 410.34 mg equivalents of gallic acid·kg^{-1}) showed a higher content of total phenols than 'Carson' (256.24 to 305.31 mg eq of gallic acid·kg^{-1}) (Figure 1). Considering that previous studies have confirmed a high correlation between total phenol content and antioxidant capacity ($r^2 = 0.8$) (Drogoudi and Tsipouridis, 2007), this evaluation could be used as a valuable index for crop breeders to select varieties with high antioxidant activity (Cevallos-Casals *et al*., 2006). Differences of antioxidant capacity are mainly attributable to genetic base, seasonal variability, and climatic conditions (Gil *et al*., 2002; Drogoudi and Tsipouridis, 2007; Andreotti *et al*., 2008).



GAE: gallic acid equivalent.

Figure 1. Total phenol content of 'Elegant Lady' and 'Carson' peaches evaluated at harvest (F0); on ripe fruits not submitted to cold storage (R0); on firm fruits after 30 d of cold storage (F30); and on ripe fruits after 30 d of cold storage (R30).

Low molecular weight phenolic compounds. Low molecular weight compounds were identified as 15 and 12 in 'Elegant Lady' and 'Carson', respectively (Table 3). (+)-Catechin was the major compound found in both cultivars with concentrations close to 12 mg kg^{-1} in 'Elegant lady' and 4 mg kg^{-1} in 'Carson', and this coincides with previous results on peaches and nectarines where chlorogenic acid, (+)-catechin, (-)-epicatechin, rutin, and cyanidin-3-glucoside were detected as the main phenolic compounds (Andreotti *et al*., 2008). Lee *et al*. (1990) studied the phenolic composition of 15 peach cultivars and observed a huge difference in the (+)-catechin concentration with values 600% higher for this compound in fruits of the 'Eden' as compared with those of the 'Newhaven'. The concentration differences observed in (+)-catechin and (-)-epicatechin between 'Elegant Lady' and 'Carson' could be related to the higher activity of the enzymes responsible for the synthesis of these compounds (leucoanthocyanidin reductase and anthocyanidin reductase, respectively) in 'Elegant Lady'. In this study, chlorogenic acid was more relevant in 'Elegant lady' not submitted to cold storage. Therefore, when fruits were submitted to cold storage, the chlorogenic acid content showed a remarkable drop (Table 3). Chlorogenic acid has been related to levels of brown rot (*Monilinia fruticola*) disease resistance and browning flesh reactions in the peach flesh and skin (Cheng and Crisosto, 1995).

The PCA showed that the first two components explained 79% of the model. PC1 explained 56.1% and PC2 22.9% (Figure 2). PC1 was formed by gallic acid, neochlorogenic acid, procyanidin B1, procyanidin

Table 3. Concentration of low molecular weight phenols identified by HPLC-DAD on 'Elegant Lady' and 'Carson' peaches evaluated at harvest (F0); on ripe fruit (R0); on firm fruit after 30 d of cold storage (F30); and on ripe fruit after 30 d of cold storage (R30).

	'Elegant Lady'				'Carson'			
Phenolic compounds	F0	R0	F30	R30	F0	R0	F30	R30
Gallic acid	1.68 ± 0.19[a]	2.12 ± 1.02	1.34 ± 0.04	1.48 ± 0.25	1.23 ± 0.01	-	-	1.29 ± 0.03
Neochlorogenic acid	2.21 ± 0.59	2.36 ± 0.54	1.00 ± 1.35	0.87 ± 0.28	0.42 ± 0.19	-	0.25 ± 0.05	0.53 ± 0.25
Procyanidin B3	4.79 ± 1.42	5.08 ± 0.88	4.14 ± 2.70	4.15 ± 0.85	2.49 ± 0.30	1.86 ± 0.02	3.20 ± 0.44	2.22 ± 0.32
Procyanidin B1	2.56 ± 0.50	2.39 ± 0.14	2.59 ± 0.50	2.69 ± 0.31	-	-	-	-
(+)-Catechin	13.38 ± 5.32	12.50 ± 2.06	10.34 ± 9.95	11.29 ± 2.81	4.18 ± 0.55	-	4.85 ± 0.84	3.10 ± 0.91
Chlorogenic acid	10.62 ± 3.14	11.55 ± 1.60	4.80 ± 5.92	4.10 ± 1.19	2.76 ± 1.29	-	0.87 ± 0.55	3.03 ± 1.36
(-)-Epicatechin	1.50 ± 0.71	1.88 ± 0.09	1.69 ± 1.09	1.52 ± 1.07	-	-	-	-
Procyanidin gallate 1	2.40 ± 0.56	3.38 ± 0.57	2.75 ± 0.28	2.93 ± 0.75	2.91 ± 0.41	3.40 ± 0.81	2.70 ± 0.09	3.06 ± 0.07
Procyanidin	2.90 ± 0.42	2.84 ± 0.14	2.79 ± 0.62	2.57 ± 0.24	-	-	2.22 ± 0.15	-
Procyanidin gallate 2	-	1.62 ± 0.53	-	-	-	-	-	-
Ellagic acid	-	1.98 ± 0.09	1.80 ± 0.13	2.40 ± 0.49	-	2.25 ± 0.69	-	2.07 ± 0.11
Flavonoid 1	-	1.35 ± 1.32	0.33 ± 0.04	0.76 ± 0.70	1.33 ± 0.48	2.91 ± 1.45	0.88 ± 0.08	2.35 ± 0.63
Procyanidin gallate 3	2.40 ± 0.31	2.76 ± 0.07	2.13 ± 0.33	2.23 ± 0.47	2.82 ± 0.73	4.07 ± 0.82	2.44 ± 0.28	2.51 ± 0.24
Flavonoid 2	1.72 ± 2.32	8.68 ± 10.84	0.84 ± 0.03	-	0.42 ± 0.19	0.54 ± 0.18	-	0.42 ± 0.12
Flavonoid 3	0.87 ± 0.77	2.40 ± 2.46	2.68 ± 0.87	2.69 ± 0.65	2.33 ± 0.31	1.82 ± 0.21	1.18 ± 0.76	1.91 ± 0.16

[a]Mean ± SD (n = 3).

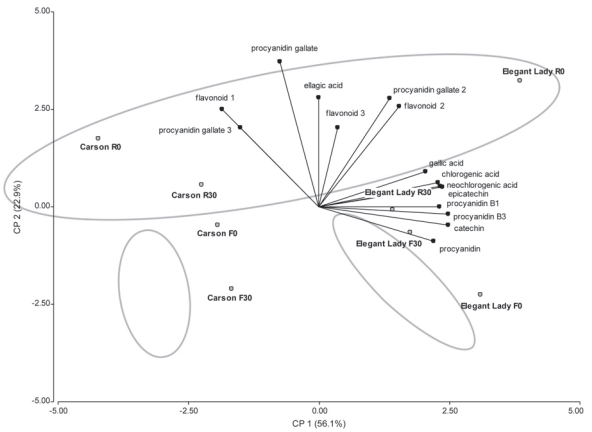


Figure 2. Principal component analysis for the characterization of low molecular weight phenolic compounds in 'Elegant Lady' and 'Carson' peaches evaluated at harvest (F0); on ripe fruits not submitted to cold storage (R0); on firm fruits after 30 d of cold storage (F30); and on ripe fruits after 30 d of cold storage (R30).

B3, (+)-catechin, chlorogenic acid, (-)- epicatechin, procyanidin, flavonoid 1, and procyanidin gallate 3. PC2 included procyanidin gallate 1, procyanidin gallate 2, ellagic acid, flavonoid 2, and flavonoid 3. Three clusters were formed: the first included 'Carson' F0 and F30; the second 'Elegant Lady' at F0, F30, and R 30; and the third was made up of ripe 'Elegant Lady' at R0 and 'Carson' at R0 and R30. 'Elegant Lady' was associated more to the compounds related to PC1, which are those that primarily correspond to flavanols or condensed tannins. These compounds exhibit (+)-catechin and (-)-epicatechin as a base, and are responsible for tartness, astringency, and a great susceptibility to oxidize as gallic, phenolic, chlorogenic and neochlorogenic acids.

Sensory evaluation. Ripe 'Elegant Lady' not submitted to cold storage achieved the highest acceptability (10.5) while ripe 'Carson' reached 8.75 (Figure 3). After 30 d of cold storage, ripe 'Elegant Lady' was unacceptable (0.87); however, ripe 'Carson' reached a mean score (7/15). This low acceptability in ripe 'Elegant lady' was mainly due to the appearance of physiological disorders such as flesh mealiness and bleeding. The degree of mealiness in MF varieties increased substantially with increased cold storage time (Brummell *et al*., 2004). A previous study reported that 'Elegant Lady' peaches showed 7% of fruit affected by mealiness after 7 d in cold storage and 52% after 21 d (Infante *et al*., 2009). This result agrees with other studies that state that cold storage of peaches negatively affects sensory quality (Brummell *et al*., 2004; Infante *et al*., 2009). On the other hand, NMF varieties are not affected by flesh mealiness, even after a long cold storage period.

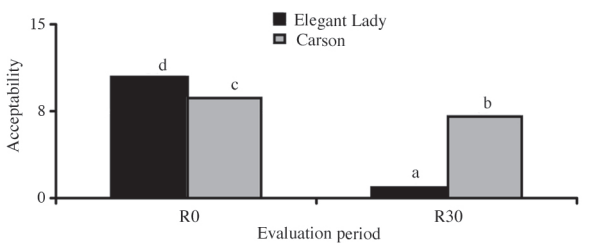


Figure 3. Acceptability evaluated by a non-structured guideline from 0 to 15 with a consumer test (n = 36) on ripe 'Elegant Lady' and 'Carson' peaches, on fruit not submitted to cold storage (R0), and on ripe fruit after 30 d of cold storage (R30).

PC1 and PC2 explained 97.7% of the total variation in the model (Figure 4). PC1 (71.9%) included the aroma, sweetness, acid taste, juiciness, and flavor variables. PC2 was comprised of appearance and texture. Both varieties when not submitted to cold storage were related more to the juiciness, acid taste, flavor, aroma, and sweetness variables; in contrast, a low association with these variables was observed after 30 d of cold storage undoubtedly because the lack of juiciness generally appears after 20 d of cold storage (Brummell *et al*., 2004). 'Carson' appeared to be associated more to texture than 'Elegant Lady' because of its NMF. Positive correlations were observed between flavor and juiciness; flavor and acid taste, as well as between juiciness and sweetness, juiciness and acid taste with correlation coefficients (r) of 0.93 and 0.99, respectively (data not shown).

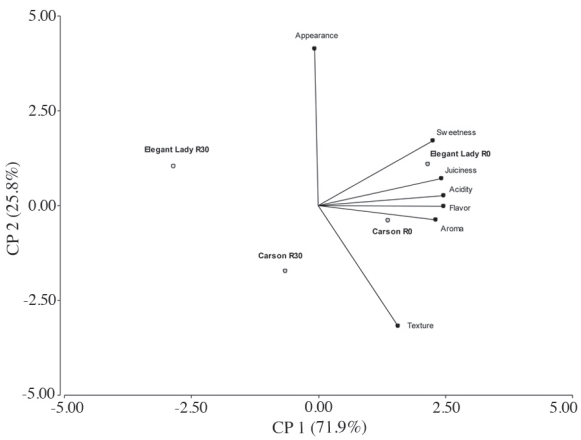


Figure 4. Principal component analysis for the sensory evaluation of ripe 'Elegant Lady' and 'Carson' peaches on fruit not submitted to cold storage (R0) and on fruit after 30 d of cold storage (R30).

CONCLUSIONS

Total phenol content did not change significantly as a result of cold storage. The main differences in phenolic composition were variety-dependent, and 'Elegant Lady' showed the highest phenol content. 'Elegant Lady' is more closely related to flavanols in the phenolic characterization.

Acceptability of both varieties diminished after cold storage; however, 'Carson' showed a higher acceptability than 'Elegant Lady'. The NMF cultivars would contribute in improving the sensory quality of new peach varieties, particularly on the global market scene where long

distance and shipping times would force the development of new peach cultivars that could withstand these long periods of cold storage.

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Caracterización fenólica y sensorial en poscosecha de duraznos 'Elegant Lady' y 'Carson'. La demanda de fruta de alta calidad se ha incrementado junto con la necesidad de asegurar este atributo a los consumidores. En este sentido, el objetivo de este estudio fue caracterizar durazno (*Prunus persica* (L.) Batsch) de variedades de pulpa fundente ('Elegant Lady') y no fundente ('Carson'), considerando su contribución de compuestos bioactivos y su calidad sensorial en fruta madura a cosecha y luego de un período prolongado de almacenamiento refrigerado. Las variedades fueron evaluadas a la cosecha (F0) y luego de 30 d de almacenamiento refrigerado (F30), además de un período de maduración a 20 ºC en F0 y F30 (R0 y R30, respectivamente). Se registró el peso del fruto, firmeza de pulpa, contenido de sólidos solubles (CSS), acidez titulable (TA), y color de fondo (Hue) en cada tratamiento. Además se cuantificaron los fenoles totales y se realizó una caracterización fenólica de ambas variedades a través de un HPLC (High-Performance Liquid Chromatography) para detectar los principales compuestos fenólicos de bajo peso molecular presentes en el fruto. Finalmente un panel entrenado evaluó los principales parámetros sensoriales en R0 y R30. El contenido de fenoles totales no varió significativamente como resultado del almacenamiento en frío, las diferencias observadas sólo fueron atribuibles a los genotipos. Se detectaron 15 y 12 compuestos fenólicos de bajo peso molecular en 'Elegant Lady' y 'Carson', respectivamente, siendo catequina el principal compuesto encontrado en ambos cultivares, aunque en mayores concentraciones en 'Elegant Lady'. En la caracterización fenólica, 'Elegant Lady' apareció más estrechamente relacionada con los flavonoides que 'Carson'. Después de 30 d de almacenamiento en frío, 'Elegant Lady' no fue aceptable para consumo debido a la aparición de desórdenes fisiológicos como harinosidad, mientras que 'Carson' mostró una puntuación promedio dentro del rango de aceptabilidad.

Palabras clave: parámetros de calidad, evaluación sensorial, fenoles totales, catequina, HPLC.

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