

# Analysis of peach fruit slices osmotically dehydrated with sorbitol and hot-air-dried over a 55-day conservation period

Julietta Gabilondo<sup>2</sup>, Lara Salvañal<sup>1\*</sup>, Rafaela Francesconi<sup>1</sup>, Claudio Budde<sup>2</sup>, Victoria Pieroni<sup>3,5</sup>, Fernanda Gugole Ottaviano<sup>3</sup>, Miriam Sosa<sup>3,5</sup>, Silvina C. Andres<sup>4</sup>, Lorena Garitta<sup>3,5</sup>, Graciela Corbino<sup>2</sup>, M. Valeria Lara<sup>1</sup>

<sup>1</sup>Centro de estudios Fotosintéticos y Bioquímicos (CEFOBI), (CONICET), Rosario, Santa Fe, Argentina.

<sup>2</sup>Estación Experimental Agropecuaria INTA San Pedro, Buenos Aires, Argentina.

<sup>3</sup>Instituto Superior Experimental de Tecnología Alimentaria - Comisión de Investigaciones Científicas de la Provincia de Buenos Aires (ISETA-CICPBA), 9 de Julio, Buenos Aires, Argentina.

<sup>4</sup>Centro de Investigación y Desarrollo en Criotecología de Alimentos (CIDCA), CONICET-CICPBA- Fac. Cs. Exactas UNLP, La Plata, Argentina.

<sup>5</sup>Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), CABA, Argentina.

\*salvañal@cefobi-conicet.gov.ar

Peach is a subtropical fruit with a fleshy pulp and a delicate aroma. It's the third more commercialized fruit around the globe; though, it is perishable having a short shelf life. Various strategies are employed to maintain its nutraceutical properties. One emerging method is osmotic dehydration (OD) followed by heat drying, which prevents browning and the loss of bioactive compounds due to prolonged heating. While sugars like sucrose can be used in OD, sorbitol, a naturally occurring substance in peaches, is considered a healthier alternative. Sorbitol has reduced calorie content and a very low glycemic index, making it suitable for diabetics and those seeking low-sugar snacks. Previous research of our group demonstrated that sorbitol can be used in OD processing of peach slices, resulting in a healthier product. The current study focuses on assessing the stability of dried peach slices osmotically dehydrated with sorbitol over a 55-day conservation period.

## MATERIALS AND METHODS

Flordarking (FD) peaches were harvested at commercial maturity, disinfected, cut in slices and immersed in ascorbic acid and citric acid solution

Slices were incubated at 40°C in a 47° Brix sorbitol solution during 3 hours under stirring

Slices were dried at 58°C during 4 h until 8.3±1.0 % relative water content (RWC)

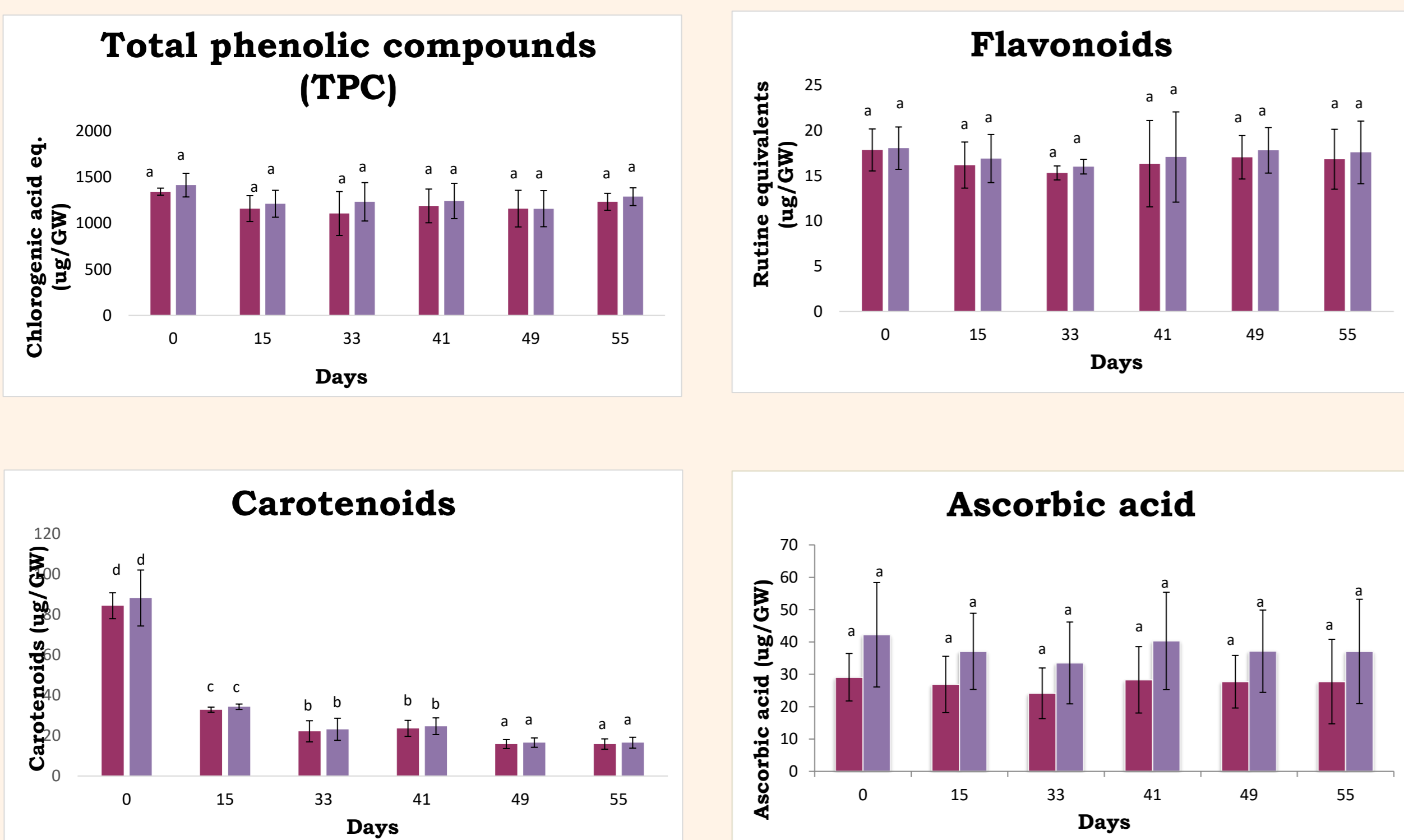
Slices were stored in a closed glass container with a supersaturated solution of NaBr to generate a 50 % relative humidity atmosphere at 25 °C during 55 days

Antioxidant activity<sup>6,7</sup>, total protein<sup>5</sup>, glucose<sup>8</sup>, sucrose<sup>9</sup>, ascorbic acid<sup>4</sup>, total phenolic compounds<sup>3</sup>, carotenoids<sup>2</sup> and flavonoids<sup>1</sup> contents were measured

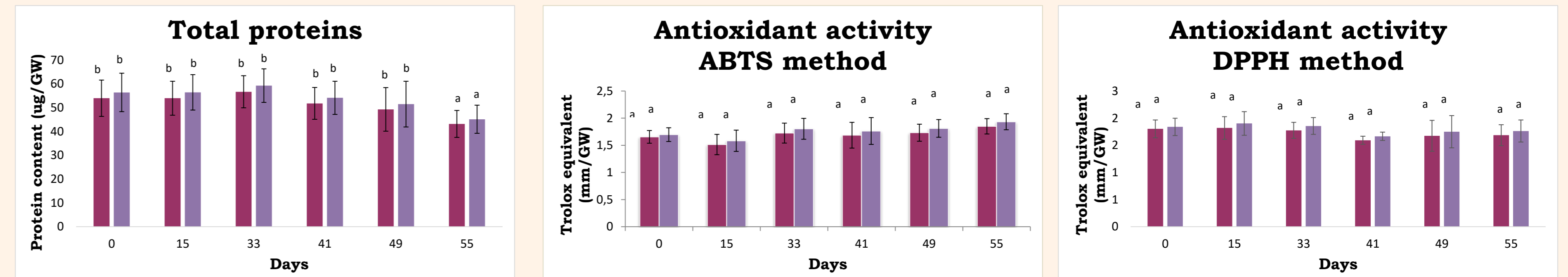
Color<sup>13</sup>, fresh, and dry weights were determined, sensory texture analysis was conducted by a trained panel<sup>12</sup>. Texture was instrumentally measured<sup>11</sup>



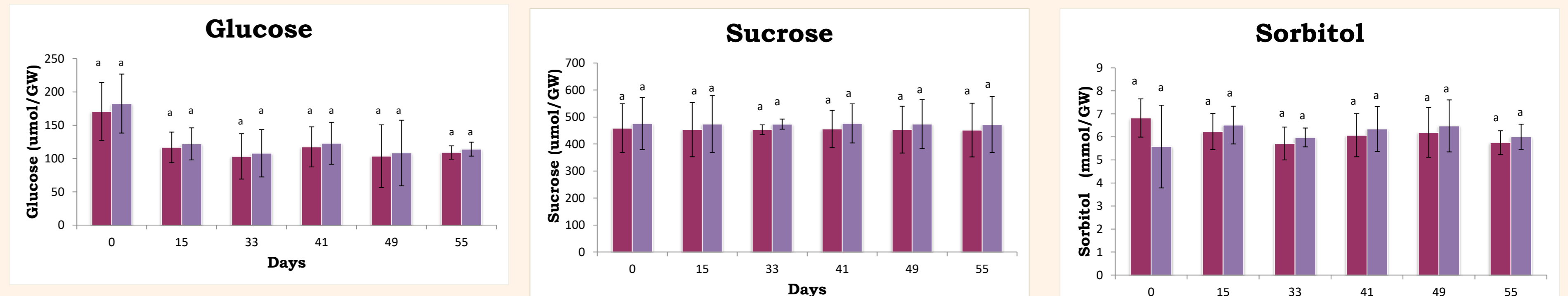
## BIOACTIVE COMPOUNDS



## NUTRITIONAL CAPACITY



## SUGARS AND SORBITOL



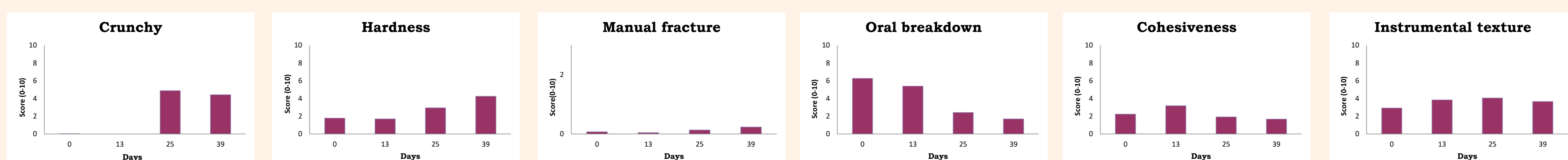
Legend: Fresh weight (light purple), Dry weight (dark purple). The results were expressed based on grams of dry and fresh weights (GW). Statistics: values with different letters are statistically significantly different ( $p < 0.05$ ), according to ANOVA followed by Tukey test.

Sugars, sorbitol, antioxidant capacity, flavonoids, TPC and ascorbic acid were maintained during the 55-days conservation period. Carotenoids decreased during conservation.

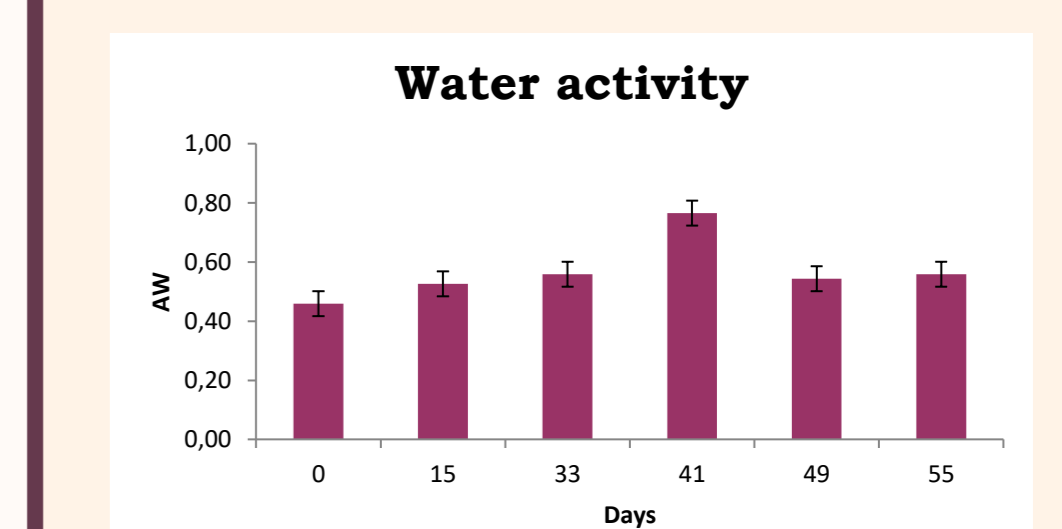
Manual fracture, texture and cohesiveness were constant over time. After 15 days, hardness and crunchy perception were increased and accompanied with a decrease in oral breakdown.

## TEXTURE PERCEPTION

SENSORY PERCEPTION (0-10)



## WATER CONTENT



## COLOUR

Days	L			a			b		
	Media	SD	Stat	Media	SD	Stat	Media	SD	Stat
0	79.95	1.63	A	-2.61	1.21	C	50.16	1.11	A
15	77.29	1.69	A	0.64	1.14	B	35.88	5.29	B
33	77.90	1.48	AC	1.09	0.78	B	34.59	5.81	BC
41	74.53	2.64	B	-1.22	0.42	A	31.00	4.40	BC
55	76.16	2.54	BC	0.54	1.00	B	30.44	3.53	C

Luminosity (L) exhibits a slight decline over the course of the days, albeit sufficiently pronounced to yield statistically significant differences. Slight changes in slices colour were observed during storage, with 55-days stored slices being reddish and less yellow than samples collected at 0. The changes in the colour of the slices could be attributed to the decrease in carotenoids. AW increase reveals that peach slices equilibrate to atmospheric humidity, as expected.

**Taking together, osmotic dehydration with sorbitol before heat drying is a plausible option to dehydrate peaches slices and to generate a healthy snack for diabetic consumers that maintains its nutritional properties and bioactive compounds over at least 55 days after processing with minor changes in the sensory perception.**

## REFERENCES AND ADITIONAL INFOMATION

