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Table S1. Sensory attributes, definition and reference standards used for “Amaretti” cookies

Attributes		Definition	Reference Standards (and their position on the scale)
Appearance	Color	Color hue from light beige to dark beige	Photo
	Visual roughness	Degree of roughness visible on the surface of the sample	Apple Granny Smith-Savoirdi biscuits-Barilla Granetti (2, 5 and 9)
	Tactile hardness	Force required to deformation or penetration of a product using the fingers	Savoirdi biscuits-Barilla Granetti (2 and 9)
Odor	Amaretto Benzaldehyde	Odors compounds associated with benzaldehyde; reminiscent of cherry or some almonds	PANEANGELI (almond aroma) 1 drop/50 mL water, 5 drops/30 mL water (3 and 8)
	Citrus fruits	Odors compounds associated with the citrus category	PANEANGELI (citrus fruit aroma) 1 drop/30 mL water, 5 drops/30 mL water (3 and 7)
	Sweet	Odors associated with that smell sweet, such as honey, brown sugar and vanilla.	Mixture of brown sugar, honey, vanilla, flour, butter and water. 20, 10, 0,1, 20, 20 g and 50 mL, respectively (9)

	Caramel	Odors compounds associated with product that smell of caramelized sugar	FABBRI (caramel aroma) Fabbri caramel 5 mL/50 mL water, FABBRI caramel (1 and 8)
Texture	Hardness	Force required to achieved a given deformation or penetration of a product using the molars	Barilla Plumcake-Barilla Tarallucci (1 and 8)
	Friability	Amaunt of particles formed after 4/5 chewing	Barilla Plumcake-Barilla Tarallucci (1 and 8)
	Moistness	Perception of moisture content of a food by the tactile recptors in the mouth	Meringue, Barilla Plumcake, Apple Granny Smith (1, 5 and 8)
	Adhesiveness	Force required to remove material that sticks to the mouth and teeth	Hard-boiled egg white, Barilla Plumcake, Mars (1, 4 and 8)
	Solubility	Perception when the product melts rapidly in saliva	Hard-boiled egg white, Barilla Plumcake, Meringue (1, 5 and 9)
Aroma	Amaretto Benzaldehyde	Aromatics associated with benzaldehyde; reminiscent of cherry or some almonds	PANEANGELI (almond aroma) 1 drop/30 mL water, 6 drops/30 mL water (3 and 9)
	Citrus fruits	Aromatics associated with the citrus category	PANEANGELI (citrus fruit aroma) 1 drop/30 mL water, 6 drops/30 mL water (3 and 9)
	Bitter almond	Aromatics associated with the bitter almonds	Slightly bitter almond and bitter almond (2 and 8)
	Off-Flavour	Atypical flavor often associated with the deterioration or transformation of the product	
Taste	Sweetness	Primary taste produced by aqueous solutions of substances such as sucrose	10 and 100 g sucrose/L (2 and 8)
	Bitterness	Primary taste produced by aqueous solutions of substances such as caffeine	0.3 and 0.6 g caffeine/L (2 and 8)

Table S2. Mean and standard deviation of sensory descriptors of *Amaretti* valued at 1 day of storage.

Descriptors	Alamonds Varieties				Significance
	AR T1	CO T1	TX T1	TU T1	
Color	5.69±1.28	5.47±1.04	5.43±1.15	5.391.28	ns

Visual Roughness	6.43±0.75	6.16±0.97	6.34±1.00	6.49±0.76	ns
Tactile Hardness	^a 4.99±1.16	^a 5.35±1.10	^b 3.88±0.96	^a 5.31±1.38	<i>P</i> < 0.018
Amaretto odor	5.09±1.09	5.17±1.38	5.38±1.14	5.50±0.90	ns
Citrus fruits odor	3.96±1.14	4.47±1.26	4.52±1.42	4.59±0.94	ns
Sweet odor	5.27±1.47	5.86±1.20	5.54±1.46	5.41±1.56	ns
Caramel odor	1.38±0.99	1.72±1.03	1.58±1.02	1.69±1.04	ns
Hardness	^{ab} 3.06±1.41	^a 4.07±1.47	^b 2.81±1.07	^{ab} 3.19±1.19	<i>P</i> < 0.043
Friability	3.29±1.33	3.11±1.33	3.17±0.92	2.84±1.13	ns
Moistness	4.76±0.79	4.55±0.64	4.92±0.83	4.42±0.72	ns
Adhesiveness	^{ab} 4.86±0.74	^a 5.44±0.99	^{ab} 5.03±0.84	^b 4.45±1.22	<i>P</i> < 0.046
Solubility	4.84±0.85	4.26±0.71	4.79±0.99	4.52±0.90	ns
Amaretto aroma	6.35±1.20	5.98±1.36	6.36±1.31	5.83±1.12	ns
Citrus fruits aroma	5.32±2.06	5.61±1.89	5.80±1.71	5.50±1.74	ns
Bitter almond aroma	3.20±1.22	2.83±1.41	2.69±1.23	2.97±1.35	ns
Off-Flavour	0.82±1.79	0.79±1.20	0.63±1.38	0.56±0.83	ns
Sweet taste	6.02±0.83	5.41±1.85	5.64±1.86	5.64±0.88	ns
Bitter taste	2.78±1.58	2.31±1.33	2.24±1.36	2.07±0.85	ns

Different letters within the same line indicate significant differences among the sample (*P* < 0.05).
n.s.. not significant.

Table S3. Mean and standard deviation of sensory descriptors of *Amaretti* valued at 7 days of storage.

Descriptors	Almonds Varieties				Significance
	AR T7	CO T7	TX T7	TU T7	
Color	5.55±1.64	5.54±1.03	5.66±1.63	4.92±1.36	ns
Visual Roughness	6.22±0.76	6.12±0.76	6.25±0.77	6.18±0.91	ns
Tactile Hardness	6.25±1.37	6.97±0.97	6.45±1.29	6.61±1.22	ns
Amaretto odor	5.59±0.79	5.06±0.99	4.91±1.35	5.19±1.08	ns
Citrus fruits odor	4.39±1.01	4.05±1.09	4.02±0.99	4.25±1.20	ns
Sweet odor	5.07±1.62	5.34±1.78	5.08±1.85	5.42±1.64	ns
Caramel odor	1.62±1.19	1.55±1.27	1.44±1.11	1.75±1.31	ns
Hardness	3.38±1.35	4.43±0.80	3.55±1.38	3.82±1.29	ns
Friability	3.50±1.77	4.34±1.06	3.90±1.13	4.18±1.23	ns

Moistness	4.49±1.11	3.92±1.12	4.28±0.92	4.23±1.13	ns
Adhesiveness	4.33±1.24	4.46±1.43	4.37±1.17	4.39±1.49	ns
Solubility	4.92±0.99	4.50±0.97	4.93±0.93	4.86±0.82	ns
Amaretto aroma	6.08±1.93	6.13±1.29	5.58±1.25	6.32±1.22	ns
Citrus fruits aroma	5.28±1.41	4.74±1.58	5.14±1.17	5.30±1.43	ns
Bitter almond aroma	2.96±1.00	3.21±1.33	3.21±1.27	3.19±1.39	ns
Off-Flavour	0.74±1.47	0.79±1.03	0.74±1.26	0.65±0.99	ns
Sweet taste	6.23±0.48	5.78±0.98	5.89±1.05	6.11±0.67	ns
Bitter taste	2.30±1.26	2.77±1.64	2.46±1.49	2.42±1.35	ns

Different letters within the same line indicate significant differences among the sample ($p < 0.05$).
n.s.. not significant.

Table S4. Mean and standard deviation of sensory descriptors of *Amaretti* valued at 30 days of storage.

Descriptors	Almonds Varieties				Significance
	AR T30	CO T30	TX T30	TU T30	
Color	5.92±1.27	5.14±1.38	5.67±1.23	4.89±1.11	ns
Visual Roughness	6.74±1.30	6.01±1.36	6.77±1.10	6.00±2.12	ns
Tactile Hardness	ab7.26±1.33	a7.75±1.14	a8.00±0.57	b6.91±1.27	$P < 0.027$
Amaretto odor	ab5.20±0.94	bc4.68±1.06	c4.32±1.35	a5.50±0.99	$P < 0.012$
Citrus fruits odor	4.45±1.34	3.95±1.37	3.81±1.37	4.24±1.28	ns
Sweet odor	4.99±2.01	5.02±2.08	4.81±2.46	5.11±1.79	ns
Caramel odor	1.14±0.82	1.12±0.78	1.05±0.75	1.22±0.89	ns
Hardness	bc4.95±1.33	ab5.53±1.11	a5.85±1.19	b4.60±1.40	$P < 0.024$
Friability	5.08±1.33	5.21±1.02	5.48±1.02	4.75±1.24	ns
Moistness	3.92±1.14	3.57±1.02	3.39±1.05	4.12±1.00	ns
Adhesiveness	4.14±1.58	4.31±1.66	4.01±1.80	4.02±1.42	ns
Solubility	4.61±1.45	4.47±1.59	4.90±1.79	5.00±1.34	ns
Amaretto aroma	5.64±1.30	5.68±1.28	4.84±1.19	5.99±1.18	ns
Citrus fruits aroma	5.10±1.72	5.02±1.67	4.68±1.67	5.04±1.50	ns
Bitter almond aroma	2.96±0.97	3.20±1.16	2.69±1.35	2.91±1.06	ns
Off-Flavour	0.98±1.58	0.82±1.37	1.07±1.56	0.96±1.67	ns

Sweet taste	6.15±0.53	6.49±0.41	6.31±0.46	6.28±0.46	ns
Bitter taste	2.40±1.11	2.66±1.41	2.38±1.41	2.47±1.20	ns

Different letters within the same line indicate significant differences among the sample (p <0.05).
n.s.. not significant

Table S5. Mean and standard deviation of sensory descriptors of *Amaretti* valued at 60 days of storage.

Descriptors	Almonds Varieties				Significance
	AR T60	CO T60	TX T60	TU T60	
Color	5.92±1.23	5.45±1.55	4.72±1.53	5.23±1.29	ns
Visual Roughness	6.74±0.98	6.48±1.21	6.08±1.53	5.75±1.26	ns
Tactile Hardness	8.29±0.61	8.45±0.96	7.45±1.53	8.06±1.37	ns
Amaretto odor	4.49±1.09	4.42±1.40	4.59±0.84	4.84±1.67	ns
Citrus fruits odor	3.68±1.41	3.68±1.43	3.78±1.36	3.69±1.63	ns
Sweet odor	5.16±2.39	5.56±2.34	5.29±2.35	4.96±2.41	ns
Caramel odor	1.05±0.66	0.96±0.75	1.11±0.79	0.92±0.67	ns
Hardness	^b 5.57±1.51	^a 6.87±1.63	^b 5.11±1.59	^{ab} 5.72±2.20	<i>P</i> < 0.024
Friability	^b 5.70±1.21	^a 6.82±1.16	^b 5.12±1.72	^b 5.50±2.11	<i>P</i> < 0.024
Moistness	3.32±1.06	2.99±1.28	3.69±1.16	3.52±1.32	ns
Adhesiveness	4.42±1.82	4.23±1.93	4.28±1.46	4.33±1.73	ns
Solubility	5.11±1.68	5.16±1.96	5.00±1.64	4.91±1.72	ns
Amaretto aroma	5.60±1.37	5.34±1.69	5.46±1.20	5.58±1.66	ns
Citrus fruits aroma	4.66±1.91	4.54±1.77	4.98±1.79	4.45±1.98	ns
Bitter almond aroma	2.81±1.37	2.96±1.64	2.79±0.99	3.04±1.25	ns
Off-Flavour	1.78±1.98	2.00±2.11	1.85±2.13	2.28±2.71	ns
Sweet taste	6.16±1.03	6.26±0.63	6.29±0.86	6.26±0.83	ns
Bitter taste	2.66±1.07	2.73±1.49	2.30±0.99	2.72±1.27	ns

Different letters within the same line indicate significant differences among the sample (p <0.05). n.s.. not significant.

Table S6. Sensory acceptance of sample after 0, 7, 30, and 60 days of storage.

Sample	T0				T7				T30				T60			
	AR	CO	TX	TU	AR	CO	TX	TU	AR	CO	TX	TU	AR	CO	TX	TU
Appearance	7.57 ^a	7.61 ^a	7.66 ^a	7.59 ^a	7.72 ^a	7.57 ^a	7.67 ^a	7.74 ^a	7.38 ^a	7.24 ^a	7.24 ^a	7.55 ^a	6.02	6.29	6.29	6.14
Taste	7.45 ^b	6.91 ^a	7.49 ^b	7.22 ^{ab}	7.15 ^a	7.26 ^a	7.35 ^a	7.20 ^a	6.95 ^a	6.57 ^a	6.93 ^a	7.00 ^a	4.46 ^{ab}	5.17 ^c	4.89 ^{bc}	4.29 ^a
Flavor	7.51 ^b	7.00 ^a	7.34 ^{ab}	7.18 ^{ab}	7.07 ^a	7.26 ^a	7.11 ^a	7.31 ^a	6.59 ^a	6.53 ^a	6.90 ^a	6.93 ^a	6.59	6.53	6.9	6.93
Taste	7.14 ^c	6.11 ^a	6.95 ^{bc}	6.64 ^b	7.07 ^a	7.06 ^a	7.28 ^a	7.22 ^a	6.47 ^b	5.81 ^a	6.67 ^b	6.78 ^b	3.91 ^a	5.08 ^b	4.80 ^b	3.57 ^a
Overall acceptability	7.45 ^b	6.57 ^a	7.32 ^b	6.93 ^a	7.24 ^a	7.11 ^a	7.33 ^a	7.11 ^a	6.72 ^{ab}	6.29 ^a	6.78 ^{ab}	6.93 ^b	4.55 ^a	5.44 ^b	5.08 ^b	4.10 ^a

Mean Values. Different letters within the same line indicate significant differences among the sample (p <0.05).

