

Supplementary Material

Changes in Physicochemical Characteristics and Volatile Flavor Compounds of Brine-Preserved Ready-to-Eat Shrimp (*Solenocera crassicornis*) during Chilled Storage

Table S1. Criteria for sensory evaluation.

Project.	Standard description	Score
Color	Red or white in color, bright, and shiny	8–10
	Light red in color, less bright and shiny	5–7
	Extremely pale or discolored, extremely poor brightness	1–4
Texture	Extremely elasticity and perfectly textured	8–10
	Less elasticity, brittle, and less damaged	5–7
	Soft and easily falls apart	1–4
Odor	Characteristic flavor of shrimp and no peculiar smell	8–10
	Characteristics of slightly worse flavor of shrimp, slightly fishy smell, and other odor	5–7
	Strong and noticeable unpleasant odor	1–4
Taste	Tender, soft and hard, and chewy	8–10
	More tender, soft, and not chewy enough	5–7
	Rough, too soft, and not chewy	1–4
Overall acceptability	Easy to accept	8–10
	Can be accept	5–7
	Unacceptable	1–4

Table S2. The volatile components and its relative content in the ready-to-eat shrimp during chilled storage.

No	Compound		Volume (a.u.)								
			CK			E1			E2		
			0	20	40	0	20	40	0	20	40
Alcohols											
1	Linalool	C78706	199.4±	211.4±	437.9±	190.2±	191.1±	305.0±	181.6±	146.5±	192.4±
			88.0c	22.7c	56.7a	12.3c	3.6c	35.5b	27.7c	61.9c	15.3c
2	(E)-3-Hexen-1-ol	C928972	63.1±	87.5±	139.5±	81.8±	104.3±	82.4±	81.3±	64.5±	71.9±
			23.1b	18.6b	20.3a	9.2b	24.7ab	22.6b	6.0b	34.2b	7.3b
3	1-Butanol-M	C71363	617.1±	472.8±	2605.8±	476.6±	275.6±	1168.0±	568.0±	1334.3±	809.5±
			57.6e	5.1f	87.8a	30.5f	36.1g	165.3c	18.5ef	32.6b	11.6d
4	1-Butanol-D	C71363	58.3±	66.0±	2399.0±	60.0±	49.0±	632.0±	65.8±	215.1±	101.6±
			7.5d	8.9d	14.6a	7.7d	7.7d	98.0b	5.2d	23.7c	13.9d
5	2-Methyl-1-propanol-M	C78831	248.4±	229.0±	2371.1±	239.3±	1233.6±	2417.6±	268.8±	370.5±	298.3±
			22.1de	9.0e	63.7a	12.2e	28.0b	34.1a	10.2de	5.1c	9.1d
6	2-Methyl-1-propanol-D	C78831	70.0±	92.0±	3410.8±	82.6±	238.0±	4769.9±	78.8±	78.6±	108.4±
			23.2c	10.1c	101.3b	4.5c	3.2c	455.3a	15.4c	21.2c	9.8c
7	1-Propanol-M	C71238	1142.5±	575.8±	2188.5±	982.5±	3077.8±	2558.3±	639.8±	1289.3±	791.0±
			71.5d	55.8f	34.0c	31.8de	419.2a	261.4b	41.3ef	97.2d	20.5ef
8	1-Propanol-D	C71238	162.1±	116.6±	7042.7±	169.9±	1601.0±	8628.2±	192.5±	377.2±	241.3±
			44.0d	13.2d	271.0b	28.2d	589.2c	710.6a	10.8d	58.2d	15.9d
9	2-Butanol-M	C78922	506.4±	467.2±	2518.6±	537.4±	583.2±	2361.3±	388.2±	416.0±	315.5±
			19.6de	11.6ef	34.9a	23.6cd	25.1c	47.3b	34.6g	32.6fg	13.4h
10	2-Butanol-D	C78922	64.0±	69.1±	1643.6±	65.3±	82.5±	2563.0±	67.9±	63.3±	59.0±
			14.8c	4.9c	29.5b	7.9c	4.0c	164.4a	3.8c	15.6c	7.3c
11	Ethanol	C64175	4916.9±	1608.0±	10105.3±	4377.0±	12568.0±	10714.2±	5213.7±	5781.3±	4916.9±
			142.6f	319.3h	52.7c	165.2g	146.0a	102.0b	127.4ef	396.7d	142.6de
12	1-Penten-3-ol	C616251	595.8±	504.7±	1065.0±	747.4±	581.5±	881.9±	394.4±	749.9±	640.6±
			40.0de	6.7ef	124.1a	34.0c	18.7de	116.1b	31.9f	11.7c	16.7cd
13	3-Methyl-1-butanol	C123513	74.6±	53.7±	81.6±	92.6±	876.3±	32.0±	89.4±	105.5±	82.2±
			8.4bcd	1.4cd	7.0bc	8.1bc	62.1a	7.0d	6.4bc	6.9b	5.2bc
14	1-Pentanol	C71410	90.4±	82.3±	85.7±	105.3±	77.2±	109.9±	129.2±	297.3±	174.2±
			10.0c	7.2c	5.6c	12.3c	9.4c	7.8c	26.3bc	70.1a	19.8b

Aldehydes											
15	Nonanal	C124196	181.7± 39.0abcd	202.8± 31.9abc	147.7± 45.7cd	215.7± 23.0ab	175.4± 33.6bcd	153.7± 44.8bcd	130.4± 5.4d	209.7± 39.1abc	247.0± 16.9a
16	Heptanal	C111717	152.9± 40.5ef	183.0± 14.3def	1017.6± 13.9b	159.5± 18.5ef	246.4± 12.3d	1362.2± 13.0a	115.6± 11.9f	213.8± 83.9de	423.1± 27.9c
17	2-Methyl-2-pentenal-M	C623369	140.2± 32.5d	143.2± 8.1d	2829.8± 18.5a	142.3± 2.2d	772.5± 296.1c	1341.0± 88.0b	89.3± 7.5d	116.0± 19.4d	110.8± 11.4d
18	2-Methyl-2-pentenal-D	C623369	55.7± 25.7c	68.5± 6.9c	4128.3± 395.6a	68.8± 7.0c	151.9± 59.9c	551.9± 80.9b	61.1± 5.8c	50.7± 25.9c	58.4± 6.8c
19	Hexanal-M	C66251	177.1± 20.3c	182.7± 2.5c	1531.1± 261.3a	213.0± 18.9c	264.8± 21.1c	1095.4± 73.6b	285.8± 42.1c	792.6± 393.2b	1812.3± 135.2a
20	Hexanal-D	C66251	33.0± 15.5c	36.0± 2.2c	176.3± 91.8b	39.3± 7.9c	36.1± 6.6c	75.9± 27.8c	40.5± 6.5c	103.9± 55.8bc	424.2± 72.1a
21	3-Methylbutanal	C590863	62.2± 20.6d	688.1± 184.4bc	841.8± 35.9bc	470.7± 417.5c	1746.9± 63.9a	557.3± 13.5bc	35.1± 4.6d	510.5± 339.9c	933.5± 145.7b
22	(E)-2-Hexenal	C6728263	22.6± 9.6c	32.4± 14.7c	121.3± 35.8b	28.1± 2.0c	48.5± 4.5c	156.0± 16.9a	27.4± 0.3c	24.0± 7.2c	26.3± 1.4c
23	Octanal	C124130	108.4± 49.8bcd	127.5± 1.0bc	73.3± 17.8d	100.5± 8.3bcd	186.4± 17.5a	90.3± 21.8cd	79.7± 7.3cd	146.8± 44.7ab	178.2± 5.8a
24	Benzaldehyde	C100527	136.4± 44.0ab	162.8± 23.4ab	122.16± 39.6b	148.8± 10.5ab	159.6± 12.2ab	109.2± 37.7b	165.0± 27.1ab	110.8± 38.9b	190.6± 9.6a
25	Methional	C100527	172.1± 25.8b	193.7± 10.6ab	116.2± 26.8c	211.2± 11.9ab	171.4± 7.8b	110.7± 19.7c0	201.8± 17.8ab	209.8± 46.3ab	231.8± 13.5a
26	Pentanal	C110623	29.4± 14.1c	53.0± 3.4c	138± 8.32c	87.3± 17.7c	59.9± 5.07c	482.1± 28.5c	45.3± 8.2c	959.4± 61.3b	2098.3± 163.1a
27	Propanal	C123386	419.7± 17.2cd	334.0± 2.6de	138.0± 4.5e	492.0± 12.4cd	458.5± 12.5cd	282.9± 19.7de	647.2± 83.4c	1507.5± 358.1b	1970.3± 13.3a
28	Diethyl acetal	C105577	977.9± 56.1b	619.1± 92.8c	238.5± 3.7d	528.0± 30.4c	573.8± 31.9c	158.1± 28.8d	1058.6± 44.1b	1609.2± 291.2a	1060.7± 187.3b
Ketones											
29	1-Hydroxy-2-propanone	C116096	50.7± 14.2c	64.1± 2.8c	597.0± 95.4a	57.2± 7.0c	78.6± 11.3c	196.4± 11.2b	54.8 ±9.0c	55.9± 30.7c	72.4± 13.2c
30	2-Heptanone-M	C110430	46.3± 7.6d	204.3± 67.5cd	274.9± 60.4bc	51.2± 2.5d	437.3± 29.7b	779.7± 2.2a	40.9± 1.4d	68.4± 7.9d	72.4± 9.2d

31	2-Heptanone-D	C110430	33.4± 16.6b	40.9± 4.5b	74.6± 9.8b	28.4± 1.9b	66.0± 11.9b	274.1± 7.7a	35.3± 6.2b	29.3± 15.6b	41.4± 2.9b
32	4-Methyl-3-penten-2-one-M	C141797	259.1± 27.6c	217.3± 12.4c	2198.7± 101.6a	184.9± 10.1c	950.8± 346.8b	912.0± 99.4b	81.8± 8.0c	78.2± 18.6c	87.3± 14.2c
33	4-Methyl-3-penten-2-one-D	C141797	48.3± 27.8b	47.8± 1.6b	2310.8± 510.3a	52.5± 4.1b	157.0± 9.0b	317.3± 73.8b	50.8± 4.6b	38.3± 15.1b	62.7± 7.7b
34	2-Hexanone	C591786	54.8± 5.1f	142.3± 39.8d	308.3± 15.8c	58.7± 1.3f	496.4± 25.9a	379.3± 14.2b	41.4± 2.5f	64.9± 13.3f	103.6± 14.1e
35	4-Methyl-2-pentanone-M	C108101	62.6± 6.5f	82.7± 15.5ef	879.5± 57.8a	72.3± 7.7f	232.5± 36.5c	687.5± 40.5b	65.0± 5.7f	131.8± 18.5de	144.1± 10.3d
36	4-Methyl-2-pentanone-D	C108101	37.3± 8.5c	44.8± 2.3c	656.8± 108.1a	46.4± 6.6c	54.2± 8.4c	367.2± 12.3b	45.8± 4.7c	40.8± 9.8c	47.2± 6.2c
37	2-Pentanone	C107879	66.8± 13.2f	166.2± 73.4ef	3789.5± 451.0a	124.6± 7.7f	1139.7± 287.0c	1761.1± 115.9b	73.3± 7.0f	551.8± 202.4de	731.7± 38.08d
38	2-Butanone	C78933	1403.2± 225.8g	2388 ±494.3f	8480.4± 219.8b	1678.5± 91.7g	4777.0± 380.6c	12031.4± 511.5a	2479.2± 56.1f	3418.6± 418.1d	4911.1± 137.9c
39	Acetone	C67641	7352.4± 190.7de	7496.8± 60.2de	3827.5± 40.8f	7674.0± 137.2cd	8096.2± 50.8c	7066.6± 269.3e	7513.1± 229.3de	9324.0± 553.7b	10580.4± 46.8a
40	3-Nonanone	C925780	81.7± 37.5b	116.3± 36.4ab	99.2± 44.4ab	101.2± 17.6ab	97.4± 9.3ab	162.5± 26.3a	91.7± 6.7b	98.8± 49.1ab	99.9± 5.3ab
Esters											
41	Pentyl acetate	C628637	40.6± 17.6c	39.9± 5.4c	77.7± 20.5b	33.9± 5.9c	43.9± 12.2c	136.6± 6.8a	40.7± 1.8c	32.6± 15.4c	39.3± 5.2c
42	Butyl propionate-M	C590012	98.6± 7.2d	70.5± 9.7e	399.5± 12.2b	138.0± 27.4c	100.9± 7.8d	666.7± 5.1a	18.3± 2.8f	19.2± 7.9f	20.3± 1.2f
43	Butyl propionate-D	C590012	33.9± 15.0c	39.5± 4.2c	358.9± 9.6b	42.9± 5.6c	46.9± 8.9c	513.3± 6.5a	36.1± 1.4c	36.2± 20.1c	38± 5.2c
44	Ethyl butanoate	C105544	30.7± 10.9b	32.7± 3.5b	175.8± 26.2a	32.5± 4.5b	33.3± 3.4b	42.4± 10.5b	34.2± 4.7b	28.5± 11.3b	39.1± 9.3b
45	Ethyl Acetate	C141786	286.8± 49.9ef	243.2± 3.2f	2279.5± 126.4b	261.3± 13.9ef	655.8± 6.5c	5254.5± 99.3a	401.5± 61.1de	624.9± 77.5c	520.9± 89.7cd
46	Propyl acetate	C109604	46.7± 5.1b	59.4± 9.8b	58.1± 10.7b	51.1± 3.7b	47.0± 4.5b	1015.2± 147.6a	71.1± 2.5b	63.6± 7.4b	70.2± 6.6b
47	Ethyl isobutyrate	C97621	19.8±	22.8±	287.7±	30.8±	36.2±	666.3±	34.2±	32.5±	29.8±

			7.7c	2.5c	40.2b	4.9c	1.8c	25.5a	1.3c	8.9c	2.4c
	others										
48	Trimethylamine	C75503	287.0± 83.5c	261.5± 53.1c	3787.0± 465.6a	273.6± 11.2c	328.5± 28.7c	1565.3± 354.7b	194.3± 30.1c	168.3± 52.9c	220.5± 66.6c
49	Triethylamine	C121448	2537.2± 68.1de	1688.8± 216.7e	28632.9± 848.0a	2465.6± 104.7de	2375.8± 206.9e	11965.1± 1270.4b	3559.9± 108.2d	5902.0± 432.1c	6629.5± 312.3c
50	2,5-Dimethylpyrazine	C123320	315.9± 51.5a	267.2± 9.5b	172.2± 32.2c	210.5± 18.0c	190.1± 3.9c	100.9± 5.8d	76.1± 4.2d	64.0± 10.3d	82.7± 27.2d
51	Acetic acid-M	C64197	4503.1± 380.5b	3760.6± 289.1cd	1208.6± 141.1e	3224.8± 50.3d	3299.4± 140.3d	1317.8± 218.4e	5540.65± 654.0a	4302.1± 253.1bc	3713.4± 64.0cd
52	Acetic acid-D	C64197	363.8± 26.3bc	330.6± 23.7bcd	138.9± 52.9de	270.7± 18.9cde	268.6± 31.3cde	111.2± 37.4e	954.2± 267.2a	497.5± 87.4b	411.2± 68.6bc
53	Ammonia-M	C7664417	9650± 1616.3e	15787.6± 4499.7cd	117106.3± 1012.9b	14390.9± 1531.2d	18958.3± 2299.5c	123572.5±519.7a	7188.7± 559.8e	7778.0± 409.8e	7206.8± 451.2e
54	Ammonia-D	C7664417	49577.7± 5811.4d	64866.6± 8900.1c	96372.9± 6203.7b	62551.6± 2886.6c	71062.3± 4192.8c	105930.6±2292.6a	26036.2± 2028.2e	28965.2± 422.0e	27696.7± 2000.3e
55	gamma-Terpinene	C99854	71.6± 3.2de	93.9± 11.9c	116.8± 5.5b	83.4± 6.3cd	61.7± 3.5ef	139.2± 8.0a	40.5± 2.4f	55.5± 13.8fg	48.7± 6.2fg
56	2,5-Dimethylfuran	C625865	25.9± 6.1d	31.6± 3.9d	668.5± 32.6a	28.5± 2.0d	77.1± 7.2c	372.5± 47.1b	25.9± 2.2d	20.3± 6.2d	28.4± 11.1d
57	Thiophene	C110021	652.7± 33.3b	538.0± 21.8d	566.4± 55.3bcd	625.3± 14.2bc	1126.5± 64.7a	567.8± 79.5bcd	539.3± 32.8cd	503.3± 13.8d	489.6± 7.3d
58	Dimethyl sulfide	C75183	7514.3± 204.7c	8512.6± 59.9a	5314.3± 81.1f	8241.9± 189.8ab	6835.1± 138.0d	6154.4± 108.4e	7013.9± 50.3d	7963.7± 113.5b	6339.2± 222.0e
59	2-Ethylfuran	C3208160	342.9± 2.2c	289.2± 31.8cd	538.9± 41.2b	342.3± 49.7c	274.7± 15.5d	682.1± 42.8a	43.0± 2.9e	65.4± 8.8e	89.6± 8.1e

Data are represented as a mean ± standard deviation of three replicates. Mean values with different lower-case letters in the same row correspond to significant differences at $p < 0.05$.