



Supplementary Materials

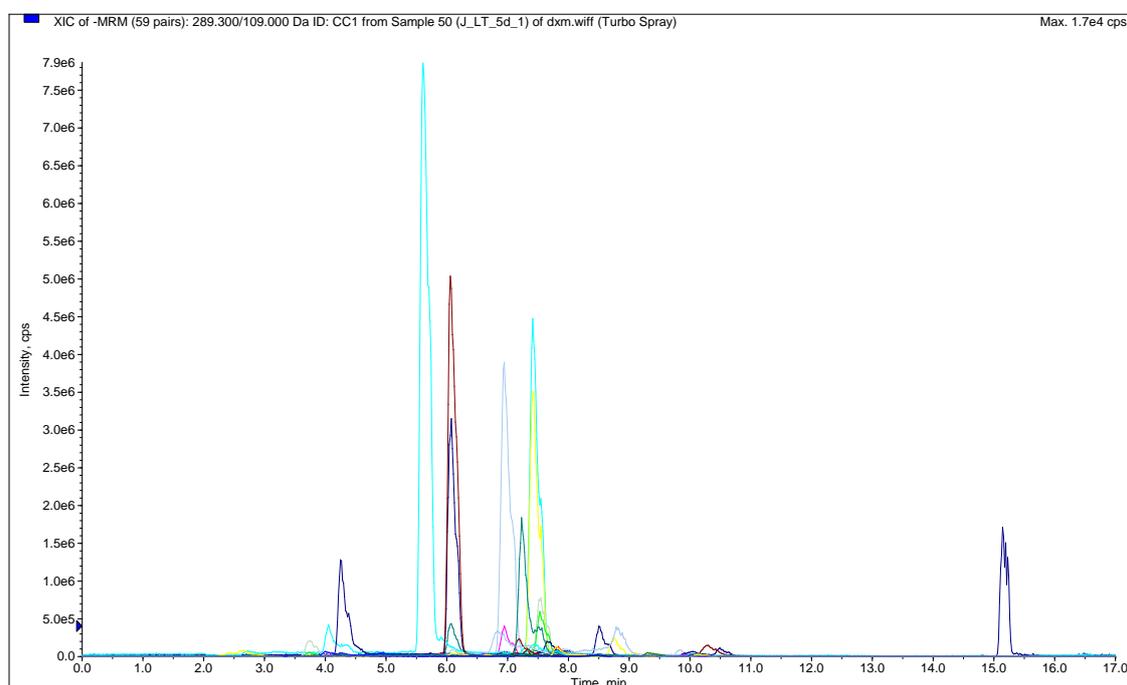


Figure S1. The extract precursor-product ions chromatograph of phenolic compounds of postharvest chives.

Table S1. Retention time (RT), MS/MS transitions, and parameters for phenolic compounds used in this study.

No	Compounds name	m/z	[M-H] ⁻	Product ion	^a DP (volts)	^b CE (volts)	Retention time (min)
1	Chlorogenic acid	353.2		190.9 *	-153	-24	5.64
		353.2		178.9	-96	-36	
2	p-Coumaric acid	163.2		119.0 *	-56	-20	6.96
		163.2		92.9	-63	-38.5	
3	Caffeic acid	179.2		134.9 *	-129	-21.5	6.08
		179.2		89.2	-108	-38	
4	Ferulic acid	193.3		133.8 *	-141	-21.5	7.44
		193.3		177.9	-111	-17.5	
5	Sinapic acid	223.2		148.7 *	-123	-26.5	7.55
		223.2		193.0	-135	-28.5	
6	Isorhamnetin	315.3		255.2	-59	-22	10.33
		315.3		299.9 *	-153	-30	
7	Naringenin Chalcone	271.2		151.3 *	-129	-22	9.92
		271.2		176.8	-117	-23.5	
8	Hesperitin	301.2		216.8 *	-189	-38	13.17
		301.2		285.2	-195	-34	
9	Neochlorogenic acid	353.2		191.1 *	-111	-25	5.11
		353.2		178.8	-90	-26	
10	p-Hydroxybenzoic acid	137.1		93.0 *	-90	-19	5.64
11	trans-Cinnamic acid	147.1		103.2 *	-49	-16	9.08
12	Phenylalanine	164.1		147.1 *	-102	-16.5	3.74

		164.1	102.7	-110	-20	
13	Vanillic acid	167.1	123.0	-120	-18	6.09
		167.1	152.0 *	-42	-22	
14	Hyperoside	463.2	300.1 *	-180	-39	7.24
		463.2	116.9	-66	-31	
15	Gallic acid	169.2	124.8 *	-57	-19	4.01
		169.2	81.0	-90	-26	
16	Dihydroquercetin	303.1	285.1 *	-110	-18	7.45
		303.1	125.0	-135	-29	
17	Rutin	609.1	300.0 *	-184	-49	6.96
		609.1	339.1	-114	-25	
18	Luteolin	285.1	133.0 *	-194	-44	9.38
		285.1	150.9	-192	-34	
19	Quercetin	301.1	151.0 *	-163	-29	9.37
		301.1	178.9	-156	-25	
20	Apigenin	269.1	117.0 *	-165	-48	10.08
		269.1	150.9	-170	-33	
21	Dihydrokaempferol	287.2	125.2	-114	-30	8.32
		287.2	259.1	-127	-20	

Note: *Product ion for quantification. ^aDP: declustering potential, ^bCE: collision energy.

Table S2. Primers used in qPCR experiments.

No	Primers name	Primers sequence
1	Actin-F	GAGCAAAGAGATTACGGCAC
2	Actin-R	CGATGAACAATGGAAGGACC
3	PAL_F	GAAACCCGAATTCACCGACC
4	PAL_R	TCGTGGAGCTTCTTTGCCAT
5	C4H1_F	AATCGAAACAACGCTATGGTC
6	C4H1_R	CAGAATTTTACTCTCAGCAGGT
7	C4H2_F	ATTATCGAGCACAAAGGCAAC
8	C4H2_R	CTATGCCCCATTCTATTGACC
9	COMT_F	TTGCCTACTGAGAATCCAC
10	COMT_R	TCTTTCAAGTAGTACCAGCTC
11	F5H_F	ACCTCGACAAACTGCCGTAC
12	F5H_R	CCACACGTTGATCATTACCCTC
13	4CL1_F	ACAGCGAATCCTTACTACACC
14	4CL1_R	TGTGTTTCATCTGCCAACTCGT
15	4CL2_F	TTGCCTAATGCAGAAATTGGTC
16	4CL2_R	CTCTAATAACAAATTTCCCCAGGT
17	CCR_F	TCAACCTACCGTGAATGCAAG
18	CCR_R	ACGAATATGGGCTTCAGCAAC
19	CAD6_F	TGTTATTAGCACGTCGCCCTC
20	CAD6_R	TGAATGTTGCGAACCCACT
23	CAD1_F	TATCAAGATCACGCATTGTGG
24	CAD1_R	AATAGTGGCATTCTCTACAGG
25	POD1_F	GCATCGGTAATCTTAGATGAC
26	POD1_R	GCGACAGTAAGAATATCAGC
29	POD42_F	ATACAATAAAGGAGGCAGTGG
30	POD42_R	TGGTCTGGCAAATACTTCTCC
33	CHS_F	ACGATACATGCACGTAAACGAAG
34	CHS_R	CCACTCTTTTATGGCGGCTT

Dihydroquercetin	0.023±0.002	0.022±0.00	0.017±0.00	0.015±0.00	0.024±0.00	0.019±0.00	0.025±0.00	0.019±0.00	0.016±0.001
	1	20	05	02	13	08	13	07	0
Neochlorogenic acid	0.0035±0.00	0.003±0.00	0.003±0.00	0.004±0.00	0.002±0.00	0.002±0.00	0.002±0.00	0.002±0.00	0.002±0.000
	02	02	01	02	02	01	01	01	1
Rutin	0.0003±0.00	0.0003±0.0	0.0003±0.0	0.0001±0.0	0.0001±0.0	0.0001±0.0	0.0001±0.0	0.0002±0.0	0.0001±0.00
	002	0003	0002	0001	0000	0000	0000	0002	000
Hyperoside	0.136±0.009	0.224±0.00	0.225±0.00	0.209±0.00	0.132±0.00	0.170±0.00	0.236±0.00	0.305±0.00	0.225±0.001
	1	49	57	37	16	25	38	14	5
trans-Cinnamic acid	0.040±0.001	0.029±0.00	0.039±0.00	0.026±0.00	0.027±0.00	0.0245±0.0	0.025±0.00	0.027±0.00	0.027±0.000
	3	12	07	05	02	006	05	04	3
Phenylalanine	0.0009±0.00	0.002±0.00	0.0127±0.0	0.067±0.00	0.001±0.00	0.002±0.00	0.009±0.00	0.016±0.00	0.032±0.000
	00	01	001	20	01	01	03	04	9
Apigenin	0.035±0.002	0.007±0.00	0.007±0.00	0.007±0.00	0.004±0.00	0.004±0.00	0.006±0.00	0.008±0.00	0.005±0.000
	0	02	02	02	03	01	01	02	0
Hesperitin	0.006±0.000	0.006±0.00	0.006±0.00	0.006±0.00	0.005±0.00	0.005±0.00	0.005±0.00	0.005±0.00	0.005±0.000
	3	03	01	04	02	03	03	01	1
Dihydrokaempferol	0.050±0.001	0.052±0.00	0.044±0.00	0.047±0.00	0.060±0.00	0.058±0.00	0.064±0.00	0.057±0.00	0.058±0.001
	3	11	06	10	10	19	14	18	1
Total	55.243±1.28	54.383±0.2	57.095±0.0	64.139±0.5	46.120±0.1	44.158±0.3	48.092±0.0	50.023±0.4	56.727±1.33
	53	272	530	97	444	126	454	947	08
Com- pounds name	RT				LT				
	0 d	1 d	3 d	5 d	1 d	3 d	5 d	12 d	19 d
Vanillic acid	1.5883±0.00	2.1194±0.0	2.2860±0.0	2.1619±0.0	1.7596±0.0	1.8697±0.0	1.8908±0.0	1.9481±0.0	2.2510±0.01
	500	7539	4514	2195	2919	3403	1850	8020	167
p-Hydroxybenzoic acid	0.9501±0.00	0.9766±0.0	1.0598±0.0	1.0362±0.0	0.8943±0.0	0.9249±0.0	0.8884±0.0	1.0261±0.0	1.1656±0.00
	718	0624	1664	1023	1089	1034	1568	0732	244
Isorhamnetin	0.0107±0.00	0.0321±0.0	0.0403±0.0	0.0500±0.0	0.0167±0.0	0.0195±0.0	0.0170±0.0	0.0226±0.0	0.0323±0.00
	049	0057	0094	0114	0073	0057	0063	0017	034
Quercetin	0.0081±0.00	0.0500±0.0	0.1505±0.0	0.0916±0.0	0.0094±0.0	0.0437±0.0	0.0136±0.0	0.0318±0.0	0.1616±0.00
	105	0085	0165	0178	0023	0117	0041	0034	094
Ferulic acid	0.8507±0.01	1.5282±0.0	1.4017±0.0	1.0914±0.0	1.0906±0.0	1.5050±0.0	1.9271±0.0	1.7630±0.0	1.6575±0.02
	306	2264	0457	0778	0531	2506	2241	2650	015
p-Coumaric acid	0.2421±0.00	0.3930±0.0	0.2755±0.0	0.2328±0.0	0.3107±0.0	0.3438±0.0	0.3619±0.0	0.2256±0.0	0.2899±0.00
	254	054	0232	0141	0452	0635	0356	0253	259
Sinapic acid	0.2418±0.00	0.2974±0.0	0.3349±0.0	0.3083±0.0	0.2583±0.0	0.3103±0.0	0.3122±0.0	0.3420±0.0	0.2951±0.00
	271	0208	0492	0300	0261	0201	0662	0350	506
Caffeic acid	0.0222±0.00	0.0309±0.0	0.0223±0.0	0.0149±0.0	0.0297±0.0	0.0634±0.0	0.0342±0.0	0.0315±0.0	0.0292±0.00
	160	0111	0121	0182	0092	0200	0066	0173	037
BW Gallic acid	0.0029±0.00	0.0115±0.0	0.0160±0.0	0.0074±0.0	0.0094±0.0	0.0099±0.0	0.0074±0.0	0.0067±0.0	0.0076±0.00
	006	0027	0038	0008	0048	0024	0015	0036	034
Chlorogenic acid	0.0578±0.00	0.0458±0.0	0.0152±0.0	0.0042±0.0	0.0036±0.0	0.0028±0.0	0.0038±0.0	0.0025±0.0	0.0022±0.00
	038	0109	0029	0087	0048	0030	0015	0063	031
Luteolin	0.0043±0.00	0.0028±0.0	0.0023±0.0	0.0025±0.0	0.0009±0.0	0.0014±0.0	0.0023±0.0	0.0015±0.0	0.0018±0.00
	021	0001	0003	0006	0004	0008	0007	0011	002
Naringenin	0.0039±0.00	0.0027±0.0	0.0028±0.0	0.0030±0.0	0.0022±0.0	0.0019±0.0	0.0018±0.0	0.0019±0.0	0.0019±0.00
	025	0009	0015	0008	0016	0010	0010	0007	007
Dihydroquercetin	0.0663±0.00	0.0579±0.0	0.0456±0.0	0.0385±0.0	0.0558±0.0	0.0530±0.0	0.0407±0.0	0.0361±0.0	0.0270±0.00
	232	0148	0083	0151	0035	0126	0060	0144	137
Neochlorogenic acid	0.0095±0.00	0.0078±0.0	0.0037±0.0	0.0028±0.0	0.0033±0.0	0.00280.000	0.0031±0.0	0.0021±0.0	0.0023±0.00
	069	0056	0029	0029	0010	18	0012	0013	017
Rutin	0.0016±0.00	0.0014±0.0	0.0006±0.0	0.0003±0.0	0.0001±0.0	0.0001±0.0	0.0001±0.0	0.0001±0.0	0.0001±0.00
	005	0010	0000	0002	0003	0001	0002	0000	000
Hyperoside	0.0006±0.00	0.0005±0.0	0.0006±0.0	0.0004±0.0	0.0002±0.0	0.0003±0.0	0.0002±0.0	0.0003±0.0	0.0012±0.00
	008	0008	0006	0004	0004	0002	0001	0003	007
trans-Cinnamic acid	0.0147±0.00	0.0218±0.0	0.0150±0.0	0.0132±0.0	0.0089±0.0	0.0098±0.0	0.0169±0.0	0.0174±0.0	0.0172±0.00
	048	0023	0038	0013	0016	0035	0048	0039	066

Phenylal- nine	0.0576±0.00 106	0.0106±0.0 0065	0.0560±0.0 008	0.1497±0.0 0253	0.0069±0.0 0060	0.0096±0.0 0104	0.0925±0.0 0303	0.1333±0.0 0246	0.1221±0.0 098
Apigenin	0.0093±0.00 017	0.0033±0.0 0001	0.0040±0.0 0006	0.0051±0.0 0012	0.0005±0.0 0006	0.0027±0.0 0006	0.0054±0.0 0021	0.0026±0.0 0008	0.0035±0.0 012
Hesperitin	0.0058±0.00 050	0.0054±0.0 0038	0.0052±0.0 0019	0.0051±0.0 0024	0.0051±0.0 0011	0.0053±0.0 0036	0.0049±0.0 0015	0.0053±0.0 0023	0.0049±0.0 012
Total	4.148±0.016 3	5.599±0.08 70	5.742±0.02 98	5.219±0.04 17	4.466±0.02 62	5.180±0.03 82	5.624±0.03 40	5.601±0.09 06	6.074±0.027 9

Note: Data are the mean of three independent measurements. RG, the round green part. BW, the bottom white part.

Table S4. ^a CSOs and amino acids content in different tissues of postharvest chive.

Tissues	Storage time	CSOs (RT)	CSOs (LT)	FAA (RT)	FAA (LT)	SP (RT)	SP (LT)
RG	0 d	1.467 ± 0.043	1.467 ± 0.043	1.028 ± 0.019	1.028 ± 0.019	22.273 ± 0.069	22.273 ± 0.690
	2 d	1.348 ± 0.019	1.382 ± 0.046	1.522 ± 0.012	1.517 ± 0.020	20.914 ± 0.330	21.813 ± 0.069
	5 d	1.513 ± 0.079	1.482 ± 0.038	2.499 ± 0.086	1.907 ± 0.038	14.639 ± 0.104	22.273 ± 0.242
	12 d		1.618 ± 0.018		2.363 ± 0.011		22.592 ± 0.242
	20 d		1.633 ± 0.038		2.721 ± 0.048		21.793 ± 0.385
BW	0 d	2.330 ± 0.012	2.330 ± 0.012	1.676 ± 0.016	1.676 ± 0.016	21.173 ± 0.415	21.173 ± 0.145
	2 d	2.775 ± 0.043	2.357 ± 0.097	5.923 ± 0.081	4.077 ± 0.160	21.993 ± 0.330	22.133 ± 0.275
	5 d	2.739 ± 0.070	2.744 ± 0.142	9.097 ± 0.088	5.439 ± 0.201	22.392 ± 0.922	23.212 ± 0.578
	12 d		3.047 ± 0.068		6.827 ± 0.069		23.392 ± 0.159
	20 d		3.217 ± 0.083		9.447 ± 0.137		23.032 ± 0.590

Note: Note: a represents our previous work (Dai et al., 2022a). Data are the means of three independent measurements. RG, the round green part. BW, the bottom white part. CSOs, S-alk(en)ylcysteine sulfoxides; FAA, free amino acids; SP, soluble protein.