

## Supplementary Information

### **Multiple fingerprints and quantitative analysis for comprehensive quality evaluation of *Citri Reticulata Pericarpium* within different storage years**

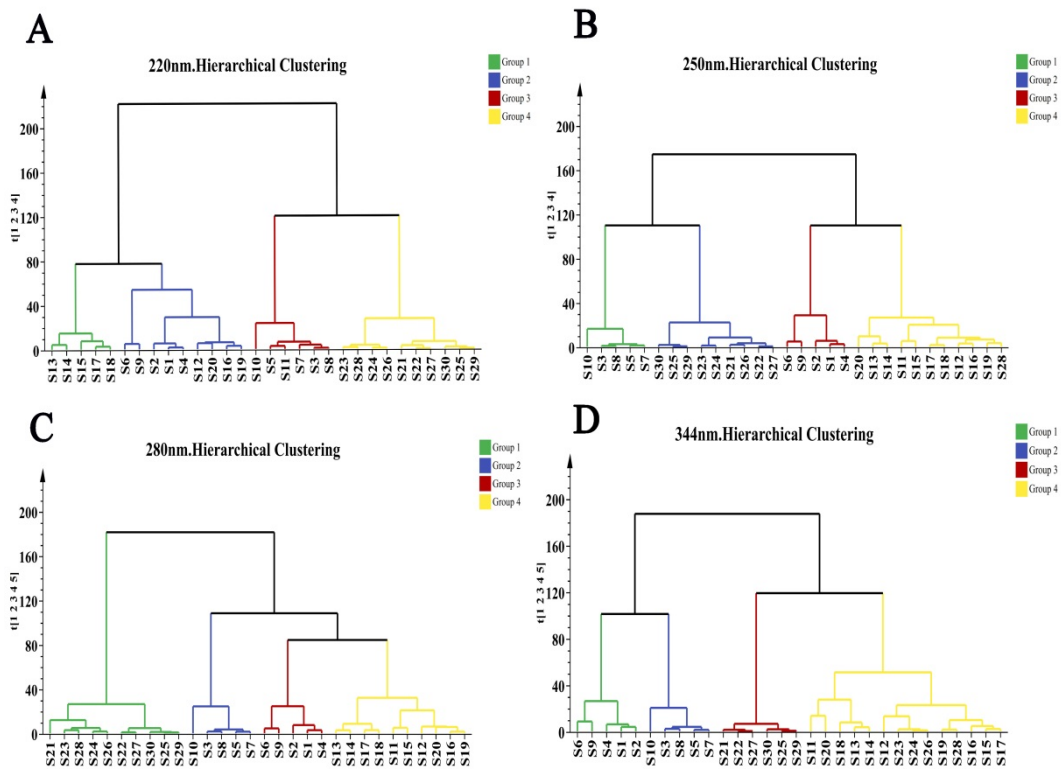
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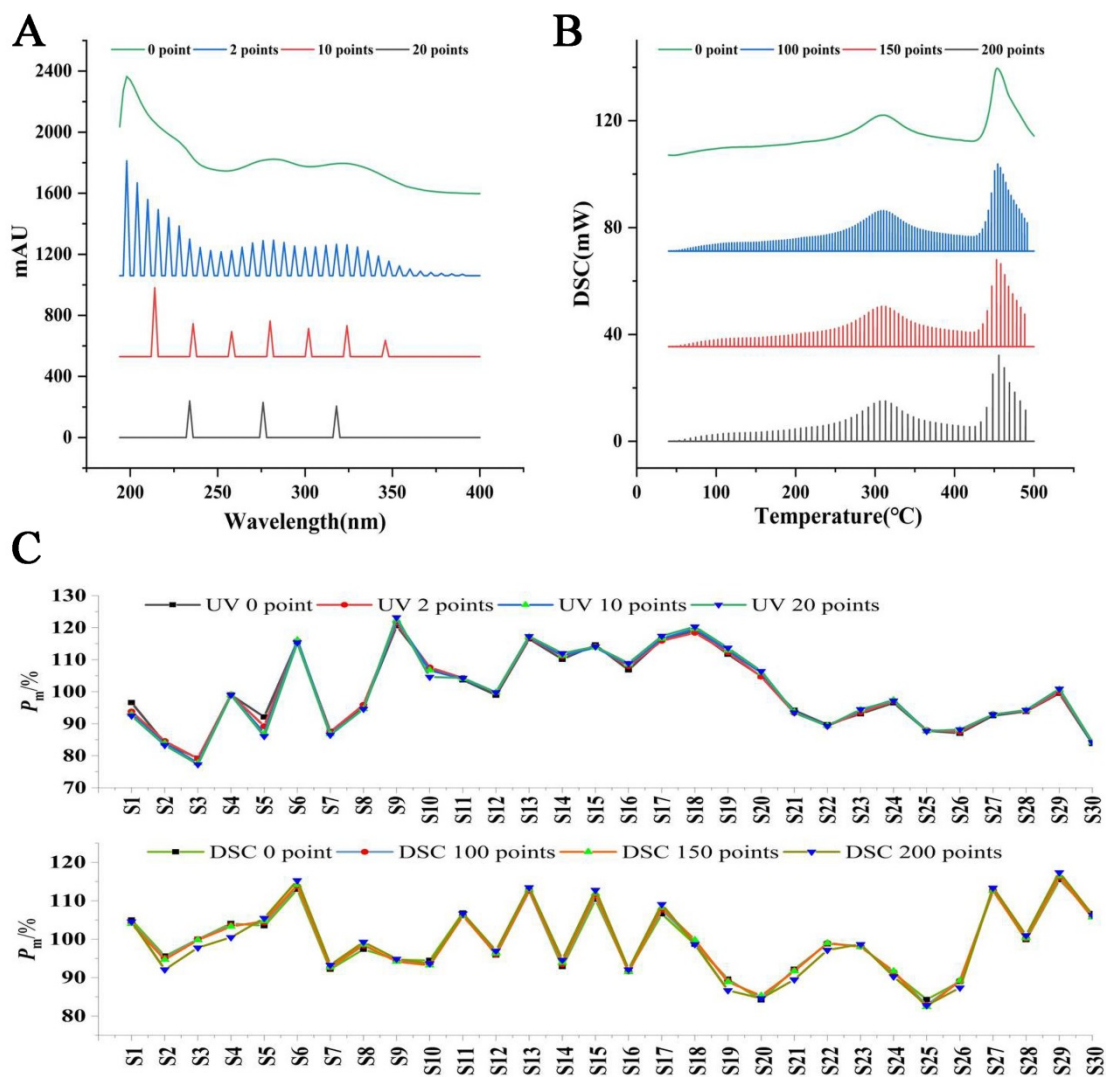
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**Fig S1** Hierarchical clustering analysis (HCA) of CRP samples by using the common peak area of individual wavelength of HPLC.



**Fig S2** The UV and DSC quantum spectra at different merging points, respectively (A, B), The  $P_m$  values fluctuation of 30 samples of the quantum and original fingerprint at different merging points (C).

**Table S1** Criteria of grade quality by QRFM

Grade	1	2	3	4	5	6	7	8
$S_m \geq$	0.95	0.90	0.85	0.80	0.70	0.60	0.50	$<0.5$
$P_m/\%$	95-105	90-110	85-115	80-120	70-130	60-140	50-150	0- $\infty$
Quality	Best	Better	Good	Fine	Moderate	Common	Defective	Inferior

**Table S2** Calibration curves, linear ranges, LOD and LOQ of the three flavonoids.

Compounds	Regression equation	r	Linear range( $\mu\text{g/mL}$ )	LOD( $\text{ng}$ )	LOQ( $\text{ng/mL}$ )
Hesperidin	$y=8.6165x+15.068$	1.000	8.52-1278	0.17	0.93
Nobiletin	$y=11.305x+3.6818$	1.000	2.40-720	0.48	1.44
Tangeretin	$y=15.174x+2.5898$	1.000	2.08-624	0.42	1.68

**Table S3** Precision, repeatability, stability and recovery for quantitative analysis method.

Compounds	Precision(n=6)	Repeatability (n = 6)	Stability (n = 7, 24 h)	Recovery (n = 6)	
	RSD (%)	RSD (%)	RSD (%)	Mean (%)	RSD (%)
Hesperidin	0.27	1.51	0.50	98.9	1.84
Nobiletin	0.21	1.36	0.40	99.1	1.65
Tangeretin	0.21	1.37	0.40	97.8	0.98

**Table S4 Each parameter value of MAML.**

Markers	$C_0$	$a$	$b$	$b_{ai}$	$f_i$	$f_{si}$	$RE_{(b)}/\%$
Hesperidin	643.26	15.068	8.6165	0.0234	8.6399	1.0000	0.27
Nobiletin	361.2	3.6818	11.305	0.0102	11.3152	0.7636	0.09
Tangeretin	313.04	2.5898	15.174	0.0083	15.1823	0.5691	0.05



**Table S5** Relative correction factors of nobiletin and tangeretin by QAMS.

No.	Nobiletin	Tangeretin
1	0.6668	0.5381
2	0.6820	0.5337
3	0.7886	0.5861
4	0.7738	0.5776
5	0.7702	0.5731
6	0.7632	0.5692
7	0.7610	0.5672
Mean	0.7437	0.5636
RSD/%	6.50	3.53

**Table S6** The contents of the 3 markers by ESM and QAMS (mg/g).

Sample	Hesperidin		Nobiletin		Tangeretin		
	ESM	QAMS	ESM	$r_{E/Q}$	QAMS	ESM	$r_{E/Q}$
S1	5.85	3.29	3.39	0.9708	2.32	2.35	0.9869
S2	5.13	2.88	2.97	0.9701	1.82	1.85	0.9864
S3	6.33	2.45	2.52	0.9721	1.60	1.62	0.9882
S4	6.50	3.43	3.53	0.9714	1.96	1.99	0.9879
S5	7.30	2.41	2.48	0.9731	1.60	1.62	0.9891
S6	8.87	3.46	3.56	0.9731	1.75	1.77	0.9900
S7	7.48	2.50	2.57	0.9731	1.72	1.74	0.9891
S8	7.57	2.12	2.18	0.9737	1.75	1.77	0.9891
S9	9.93	3.38	3.47	0.9737	2.10	2.12	0.9901
S10	6.67	2.13	2.19	0.9730	1.25	1.27	0.9893
S11	6.71	2.69	2.77	0.9722	1.52	1.54	0.9888
S12	6.62	3.47	3.57	0.9715	2.05	2.08	0.9880
S13	11.88	3.29	3.38	0.9745	2.35	2.37	0.9906
S14	12.07	2.97	3.05	0.9748	2.11	2.13	0.9909
S15	9.71	2.78	2.86	0.9741	1.76	1.78	0.9904
S16	5.64	3.20	3.30	0.9706	1.96	1.98	0.9870
S17	9.90	3.18	3.26	0.9738	2.11	2.13	0.9901
S18	10.32	3.43	3.52	0.9738	2.63	2.66	0.9899
S19	5.07	3.03	3.12	0.9699	2.24	2.27	0.9858
S20	8.72	3.48	3.57	0.9731	2.09	2.11	0.9895
S21	4.30	2.49	2.57	0.9690	1.48	1.50	0.9853
S22	3.76	2.72	2.81	0.9673	1.57	1.60	0.9837
S23	4.68	3.28	3.39	0.9690	2.02	2.05	0.9853
S24	4.45	2.98	3.08	0.9688	1.84	1.87	0.9851
S25	4.47	2.61	2.69	0.9692	1.61	1.63	0.9854
S26	5.56	2.89	2.98	0.9707	1.87	1.89	0.9869
S27	4.89	2.75	2.83	0.9698	1.68	1.70	0.9861
S28	5.16	3.13	3.23	0.9700	2.10	2.13	0.9861
S29	4.28	2.44	2.52	0.9690	1.47	1.50	0.9852
S30	3.54	2.31	2.39	0.9671	1.46	1.49	0.9832
P		0.4447			0.7786		