Electronic Supplementary Material (ESI) for Analytical Methods

SUPPLEMENTARY INFORMATION

Table S1 Chemical shifts of ^{1}H NMR spectra for eight kinds of ILs

ILs [a]	^{1}H NMR spectra (δ, $\times10^{-6}$) [b]							
	2-H	4-H	5-H	6-H	7-H	8-H	9-H	10-H
[Bmim]Cl	10.17	7.51	7.66	4.11	4.35	1.87	1.38	0.95
	(1H, s)	(1H, s)	(1H, s)	(3H, s)	(2H, t)	(2H, m)	(2H, m)	(3H, t)
[Bmim]Br	10.06	7.61	7.72	3.02	4.35	1.91	1.38	0.96
	(1H, s)	(1H, s)	(1H, s)	(3H, s)	(2H, t)	(2H, m)	(2H, m)	(3H, t)
[Bmim]BF_4	10.09	7.43	7.59	4.07	4.32	1.89	1.36	0.96
	(1H, s)	(1H, d)	(1H, d)	(3H, s)	(2H ,t)	(2H, m)	(2H, q)	(3H, t)
[Bmim]PTSA	10.16	7.44	7.56	4.08	4.29	1.86	1.33	0.93
	(1H, s)	(1H, d)	(1H, d)	(3H, s)	(2H ,t)	(2H, m)	(2H, q)	(3H, t)

[Pmim]Br	10.03	7.65	7.69	3.68	4.32	1.91	0.96
	(1H, s)	(1H, s)	(1H, s)	(3H, s)	(2H, q)	(2H, t)	(3H, t)
[Pmim]BF_4	10.15	7.42	7.58	4.07	4.29	1.95	0.98
	(1H, s)	(1H, s)	(1H, s)	(3H, s)	(2H, t)	(2H, m)	(3H, t)
[Amim]Cl	9.89	7.51	7.68	4.08	4.33	1.91	0.96
	(1H, s)	(1H, s)	(1H, s)	(3H, s)	(2H, q)	(2H, t)	(3H, t)
[Amim] BF_4	9.25	7.41	7.34	3.86	4.96	6.07	5.45
	(1H, s)	(1H, d)	(1H, d)	(3H, m)	(2H, d)	(1H ,m)	(1H, m)

[a] Eight kinds of ILs were all dissolved in $CDCl_3$ and recorded on Varian-INOVA 400 NMR spectrometry.

[b] ^{1}H NMR chemical shifts were recorded at 100MHz and reported downfield from trimethylsilane (TMS). Multiplicities are abbreviated as s=singlet, d=doublet, q=quartet, t=triplet and m=multiplet.

Table S2 Chemical shifts of ^{13}C NMR spectra for eight kinds of ILs

ILs[a]	^{13}C NMR spectra (δ, $\times 10^{-6}$) [b]							
	2-C	4-C	5-C	6-C	7-C	8-C	9-C	10-C
[Bmim]Cl	137.26	121.74	123.47	36.31	49.44	31.91	19.14	13.23
[Bmim]Br	136.49	121.86	123.44	36.29	49.32	31.69	18.97	13.02
[Bmim]BF_4	137.02	121.95	123.56	36.56	49.67	31.98	19.28	13.29
[Bmim]PTSA	137.13	121.84	123.50	36.55	49.62	32.00	19.31	13.30
[Pmim]Br	135.49	121.60	123.59	36.30	46.52	20.49	12.40	
[Pmim]BF_4	137.15	121.88	123.56	36.62	49.69	21.03	13.45	
[Amim]Cl	136.83	121.72	123.67	36.30	51.57	129.99	77	
[Amim] BF_4	138.03	121.98	123.62	36.67	53.12	133.1	115.5	

[a] Eight kinds of ILs were all dissolved in $CDCl_3$ and recorded on Varian-INOVA 400 NMR spectrometry.

[b] ^{13}C NMR chemical shifts were recorded at 400MHz and reported downfield from trimethylsilane (TMS)

Table S3 The amount (mg/g) of quercetin extracted by different extraction methods. (n=3)

Samples	Proposed method [a]		Reference methods [b]					
	ILs-MAE (10 min, 60℃)		ILs-ME (24 h, room temperature)		ILs-HE (4 h, 60℃)		ILs-UAE (2h, 60℃)	
	Observed values [c]	Recovery [c]	Observed values [c]	Recovery [c]	Observed values [c]	Recovery [c]	Observed values [c]	Recovery [c]
Toona sinensis	175.52 ± 3.08	220.28 ± 2.48	80.24 ± 2.84	132.19 ±2.61	114.84 ± 3.12	162.40 ±2.72	154.14 ± 2.95	205.92 ±3.01

[a] It was performed under optimized conditions.

[b] The contrastive methods were also carried out under their optimized conditions respectively.

[c] The results consisted of mean amount±standard deviations of triplicate measurements.

Table S4 The extracted amount (mg/g) of quercetin in samples from different producing areas and the comparison between non-degreased sample and degreased sample. (n=3)

Producing area	Observed values [a] (mean ± S.D., mg/g)	
	non-degreased sample	degreased sample
Changsha, Hunan	180.42±2.42	185.81±2.84
Dezhou, Shandong	165.58±2.98	174.56±2.22
Beijing	162.59±3.62	167.86±1.89
Yuncheng, Shanxi	173.29±1.94	189.12±3.16

[a] The results consisted of mean amount ± standard deviations of triplicate measurements.

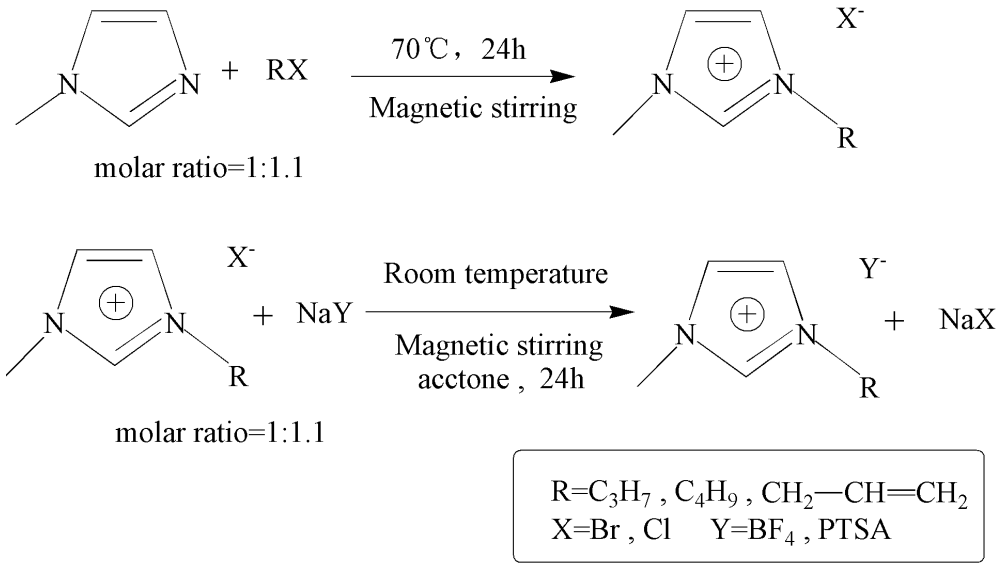

Fig.S1 synthesis processes of eight kinds of ILs

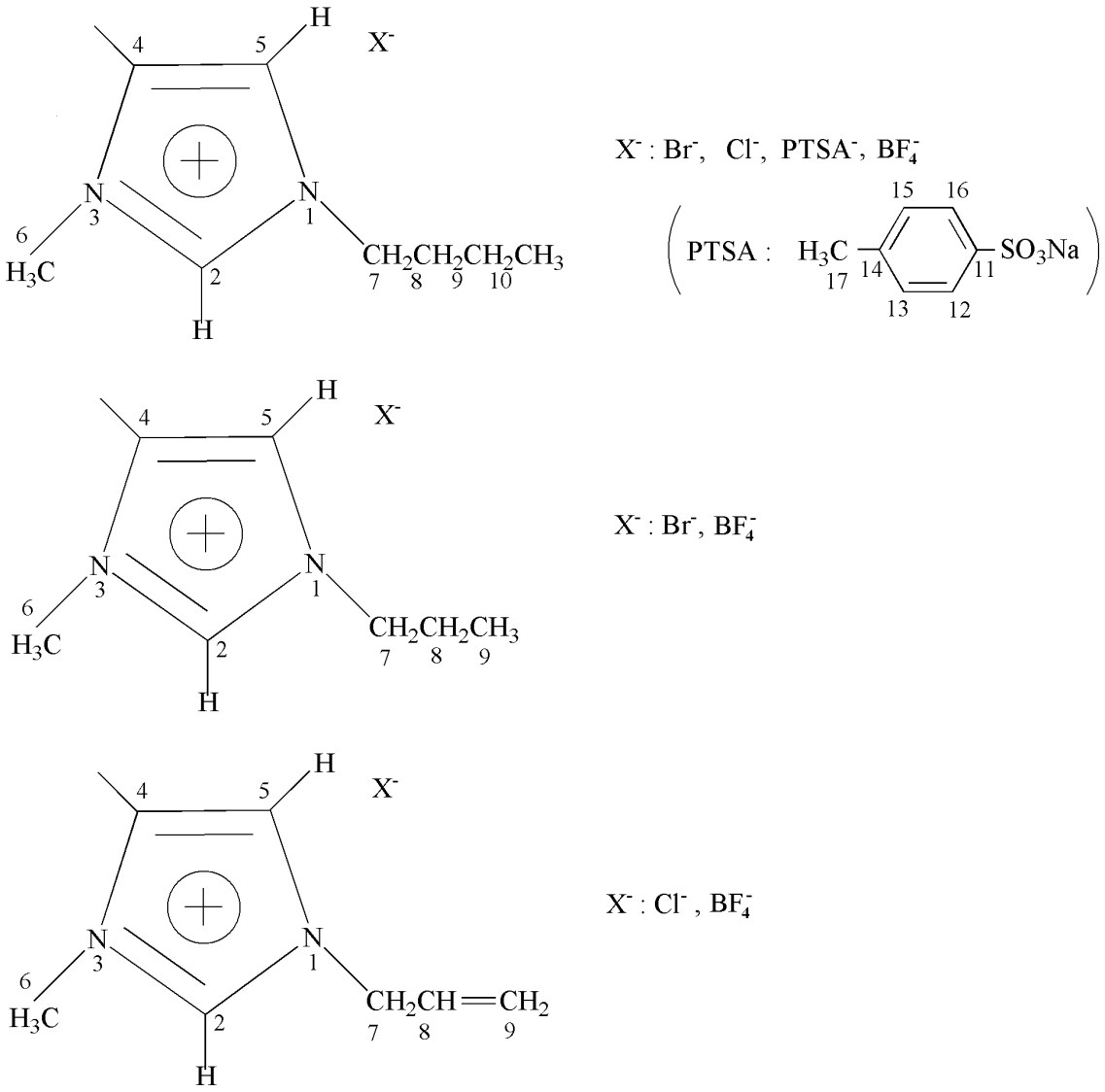

Fig.S2 constitutional formulas of eight kinds of ILs

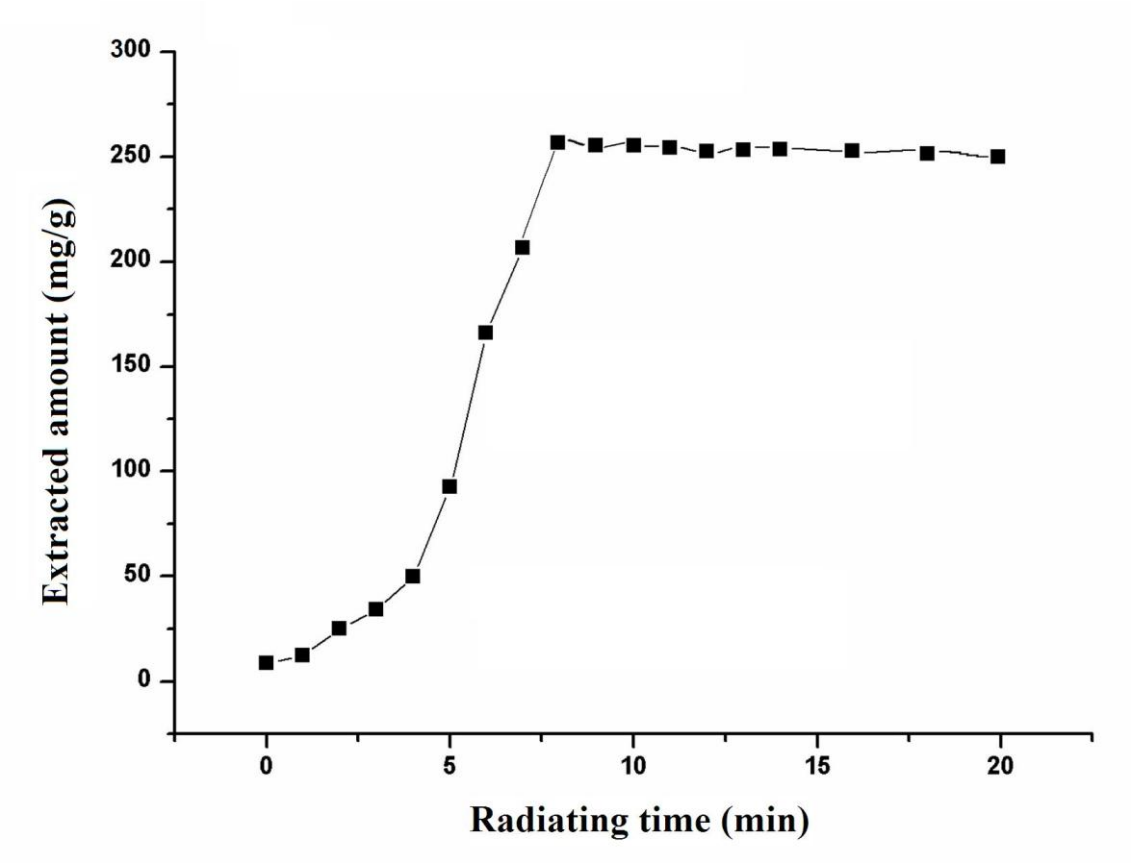

Fig.S3 The kinetic mechanism curve of quercetin extracted from *Toona sinensis*.

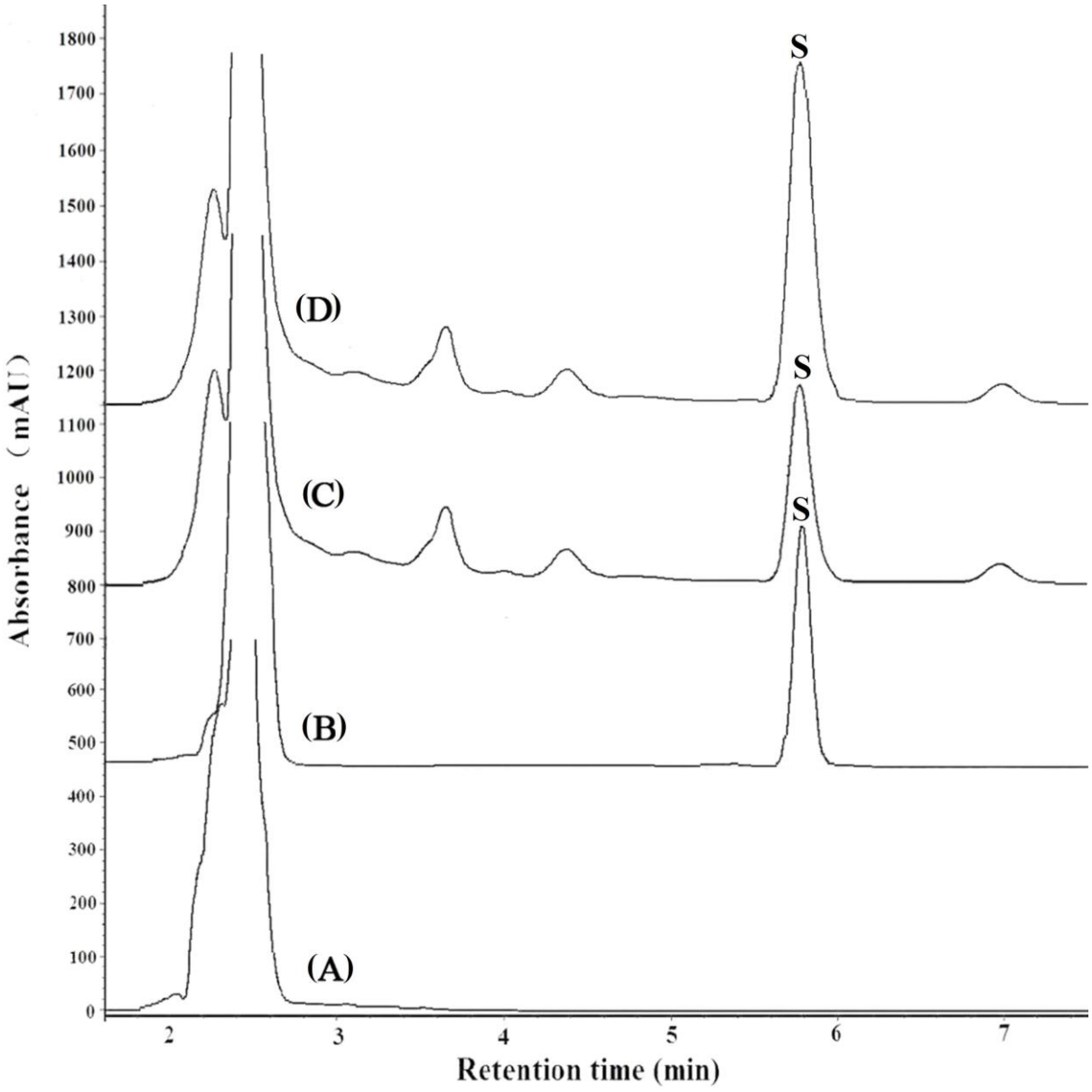

Fig.S4 Chromatogram maps of [Bmim]Br aqueous solution (the A trace), standard solution of quercetin (the B trace), extraction solution of *Toona sinensis* sample (the C trace) and extraction solution of *Toona sinensis* sample which added in few standard quercetin (the D trace). Peak S: quercetin.

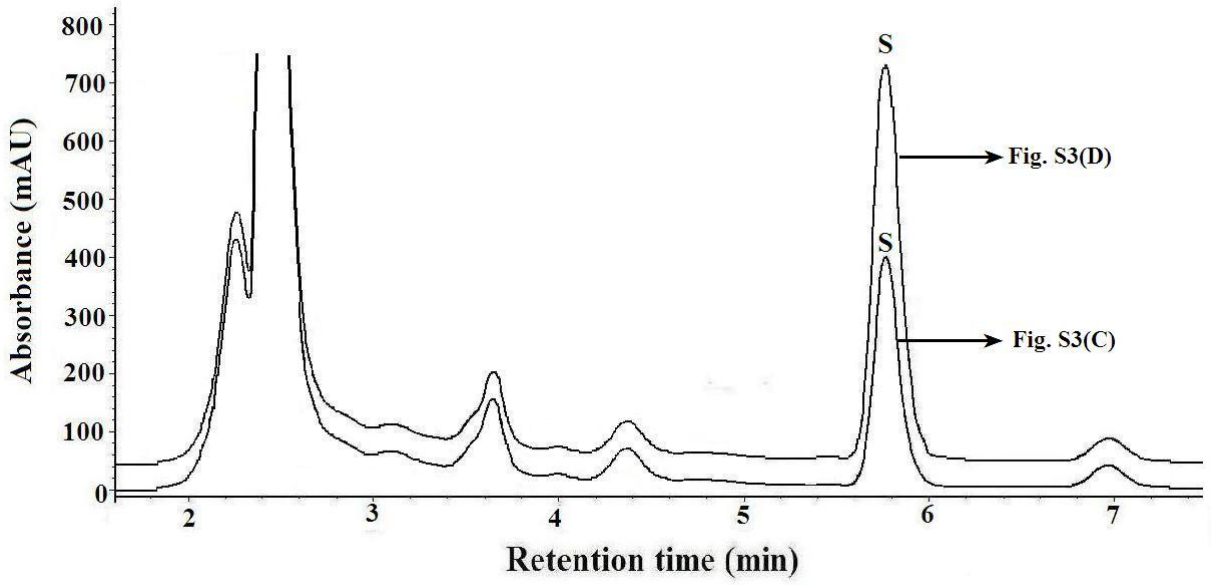

Fig.S5 Comparison of quercetin peak areas extracted from *Toona sinensis* sample (the Fig. S3(C) trace) and *Toona sinensis* sample which added in few standard quercetin (the Fig. S3(D) trace). Peak S: quercetin.

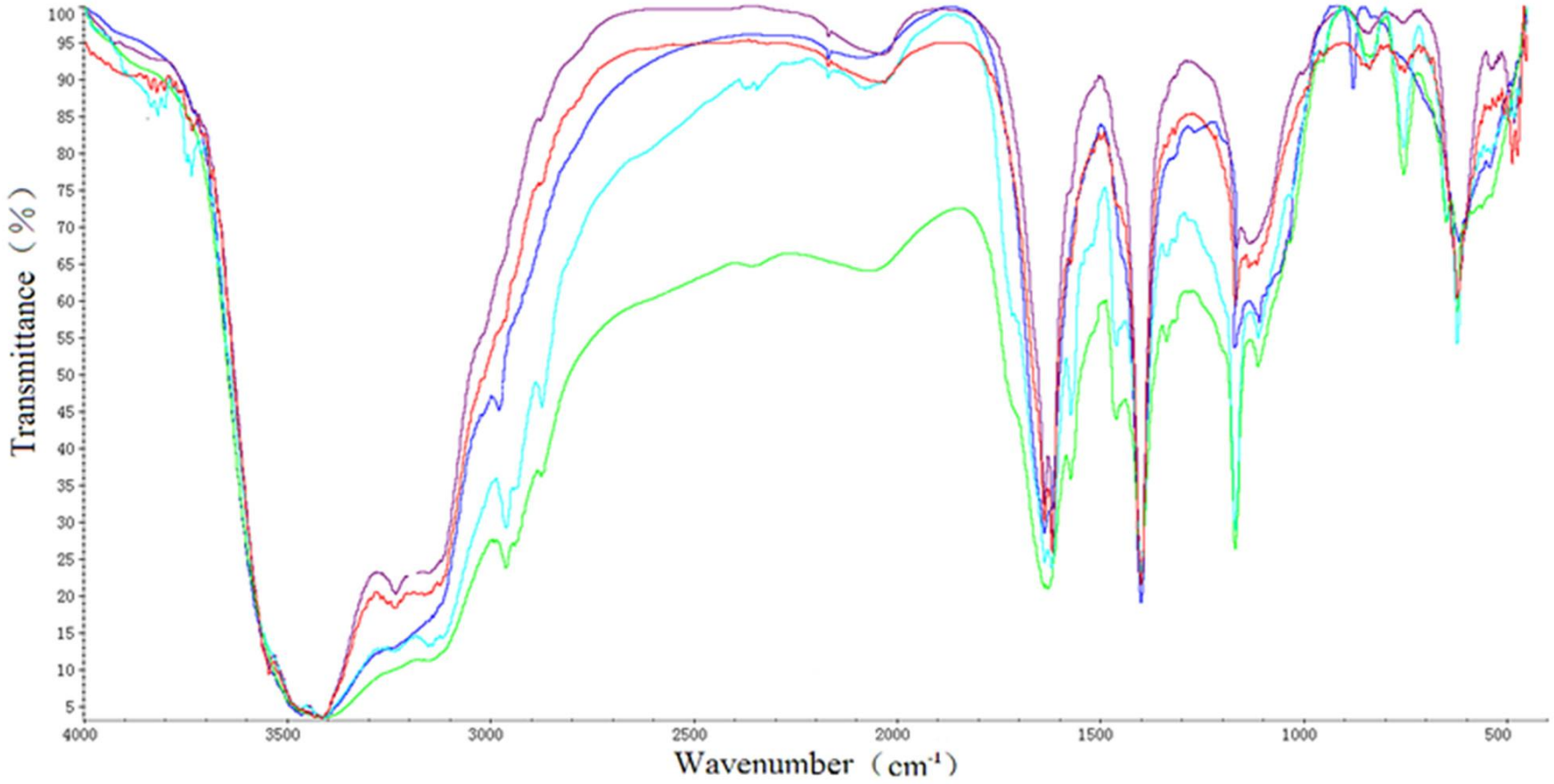

Fig.S6 FT-IR spectra of *Toona sinensis* samples before and after different extraction techniques.

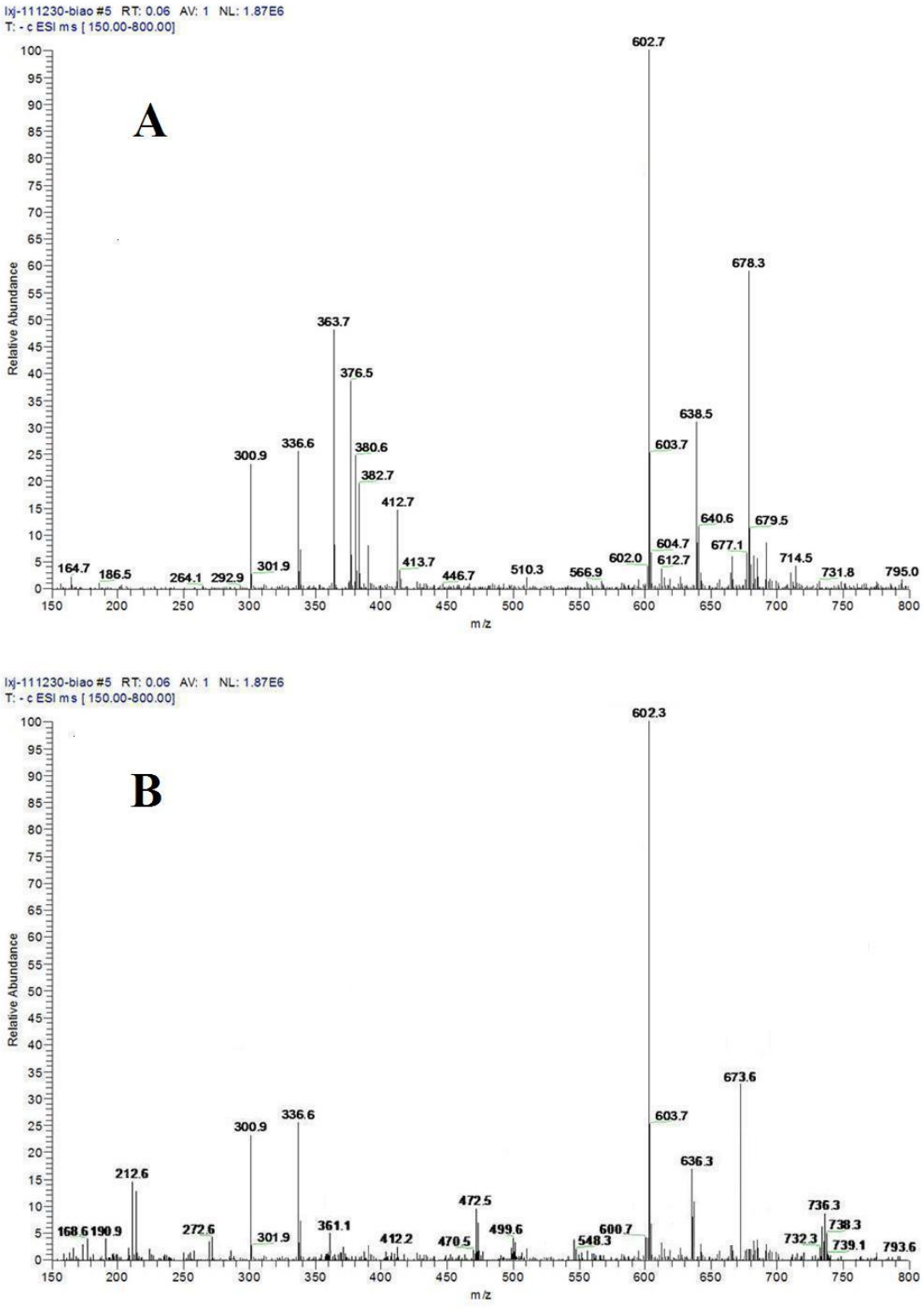

Fig.S7 Negative ion mass spectrums of quercetin standard solution (A) and quercetin extracted from T*oona sinensis* sample (B), respectively.