
SUPPLEMENTARY MATERIAL

Purification and identification of flavonoids from *Prunus mume* and its anti-photoaging activities on UVB-induced human keratinocytes

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Table S1

Table S1. Physical properties of nine types of macroporous adsorption resins

Trade name	Particle diameter (mm)	Surface area (m ² /g)	Average pore diameter (nm)	Polarity
D101	0.3-1.25	550-600	9.0-11.0	Non-polar
HPD100	0.3-1.25	650-700	8.5-9.0	Non-polar
AB-8	0.2-0.6	480-520	13.0-14.0	Weak-polar
DM130	0.3-1.25	500-550	9.0-10.0	Weak-polar
HZ806	0.3-1.25	-	-	-
HZ835	0.3-1.25	-	-	Middle- polar
HZ808	-	-	-	-
NKA-9	0.3-1.25	250-290	-	Polar
NKA-II	0.4-1.25	160-200	-	Polar

Figure S1

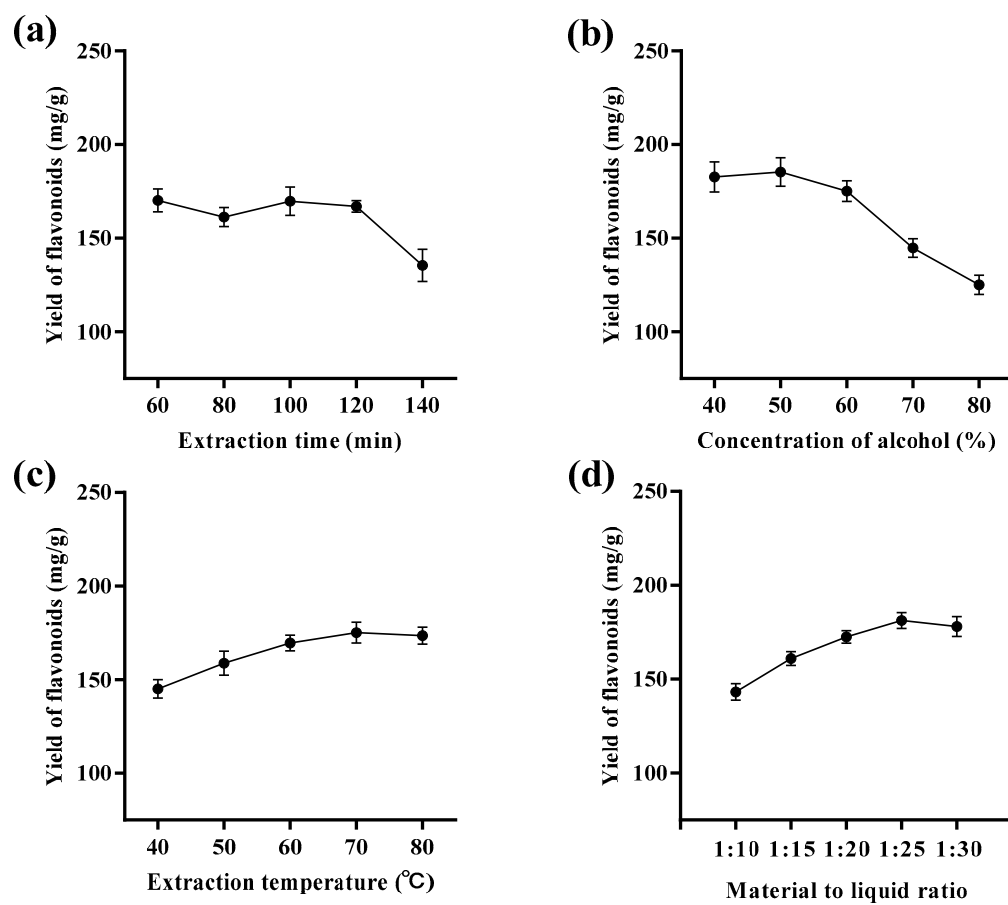


Figure S1. Total flavonoids yield of *Prunus mume* under different extraction time(a), ethanol concentration(b), extraction temperature(c) and material-liquid ratio(d).

Table S2

Table S2. Analytical results of orthogonal test

NO.	A	B	C	D	Total flavonoids yield (mg/g)		
	extraction	alcohol	extraction	material-	1	2	3
	time	concentration	temperature	liquid ratio			
1	1	1	1	1	182.12	180.96	165.61
2	1	2	3	2	195.65	207.79	194.74
3	1	3	2	3	196.42	191.50	190.62
4	2	1	3	3	184.06	188.14	188.66
5	2	2	2	1	179.33	179.05	183.28
6	2	3	1	2	159.22	156.07	161.64
7	3	1	2	2	189.26	174.72	188.76
8	3	2	1	3	174.70	175.53	179.40
9	3	3	3	1	186.71	182.39	183.96
k1	189.49	182.48	170.58	180.38			
k2	175.49	185.50	185.88	180.87			
k3	181.71	178.73	190.24	185.45			
R	14.00	6.77	19.65	5.07			

Table S3**Table S3. Variance analysis of total flavonoids content**

Source of variance	<i>SS</i>	<i>f</i>	MSE	<i>F</i>	<i>P</i>
A (extraction time)	885.18	2	442.59	16.14	<0.05*
B (alcohol concentration)	207.11	2	103.56	3.78	<0.05*
C (extraction temperature)	1917.64	2	958.82	34.96	<0.05*
D (material-liquid ratio)	140.62	2	70.31	2.56	>0.05
<i>SSe₂</i>	493.73	18	27.43		

Table S4

Table S4. Results of process validation test

NO.	Total flavonoids yield (mg/g)
1	187.31
2	195.10
3	195.26

Figure S2

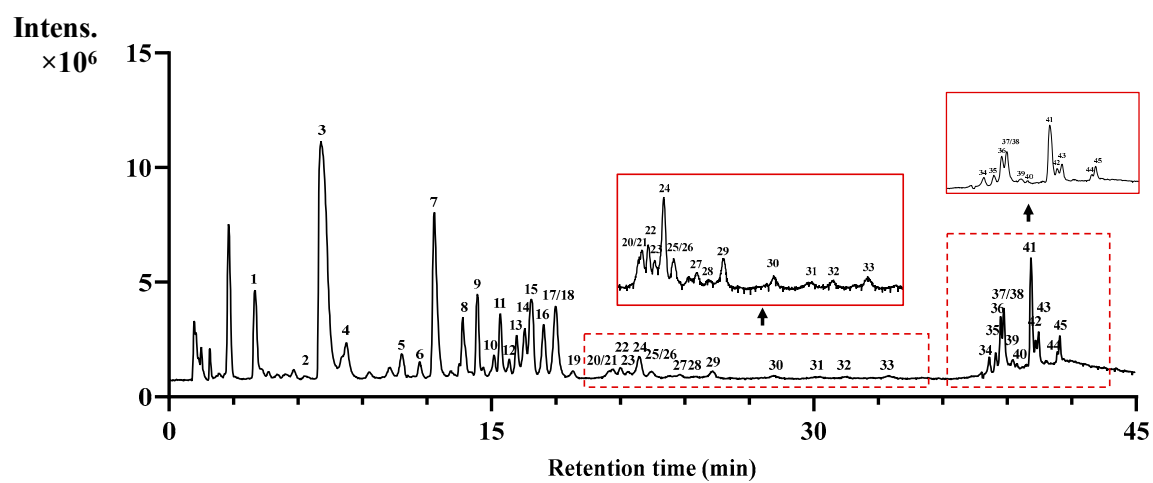
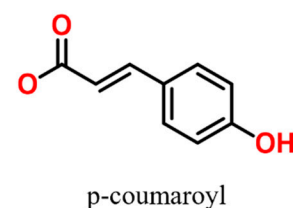
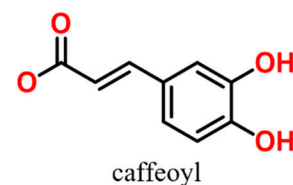


Figure S2. The total ion chromatogram (negative ion mode) of PMPP.

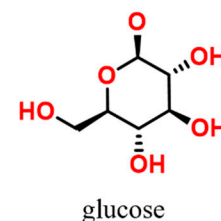
3-Caffeoylquinic acid(1)
 3-O-p-Coumaroylquinic acid(2)
 5-Caffeoylquinic acid(3)
 3-O-Feruloylquinic acid(4)
 4-Caffeoylquinic acid(6)
 5-O-p-Coumaroylquinic acid(7)
 5-O-Feruloylquinic acid(8)
 4-Benzoic acid-5-Caffeoylquinic acid(38)

R1=R2=R4=R5=H, R3= caffeoyl
 R1=R2=R4=R5=H, R3= p-coumaroyl
 R1=R2=R3=R4=H, R5= caffeoyl
 R1=R2=R4=R5=H, R3=feruloyl
 R1=R2=R3=R5=H, R4= caffeoyl
 R1=R2=R3=R4=H, R5=p-coumaroyl
 R1=R2=R3=R4=H, R5=feruloyl
 R1=R2=R3=H, R4=benzoyl, R5= caffeoyl



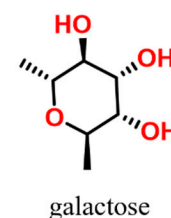
Swertiamarin(9)
 Quercetin-3-O-rutinoside(11)
 Quercetin-3-O-rhamnosyl-glucoside(14)
 Rutin(15)
 Hyperoside(16)
 Isoquercetin-3-O-rutinoside(18)
 2''-O-acetyl rutin(32)
 Quercetin-3-O-(2''-O-acetyl)-glucoside(33)

R=2'',6''-dirhamnosyl galactose
 R=neohesperidin
 R=rhamnosyl galactose
 R=kaempferol glucoside
 R= galactose
 R= glucose
 R= (2''-O-acetyl)-kaempferol glucoside
 R= (2''-O-acetyl)-glucose



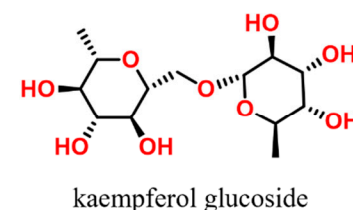
Kaempferol-3-O-rhamnosyl-glucoside(19)
 Kaempferol-3-O-galactoside(20)
 Kaempferol-3-O-glucoside(21)
 Kaempferol-3-O-glucoside(25)

R=rhamnosyl galactose
 R= kaempferol glucoside
 R= galactose
 R= glucose



Isoquercitrin(10)
 Typhaneoside(12)
 Isoquercitrin-3-O-(2'',6''-dirhamnoside)-glucoside(13)
 Isoquercetin(17)
 Isoquercitrin-3-O-rhamnosyl-glucoside(22)
 Isoquercitrin-3-O-glucoside(24)
 Isoquercitrin-3-O-galactoside(26)
 Isoquercitrin-3-O-glucoside(27)

R= sophorose
 R= rhamnosyl kaempferol glucoside
 R= 2'',6''-dirhamnosyl galactose
 R= neohesperidin
 R=rhamnosyl galactose
 R= kaempferol glucoside
 R= galactose
 R= glucose



Prunoses II(36)
 Prunoses III(37)
 Mumeose M(40)
 Mumeose N(41)
 Mumeose O(42)
 Mumeose P(43)

R2=Ac, R1=R3=R4=H
 R4=Ac, R1=R2=R3=H
 R1=Ac, R2=R3=R4=H
 R1=R2=Ac, R3=R4=H
 R1=R3=Ac, R2=R4=H
 R1=R4=Ac, R2=R3=H

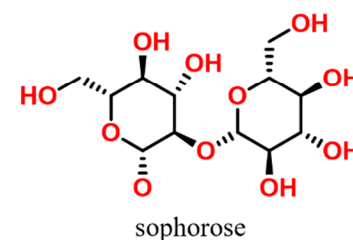
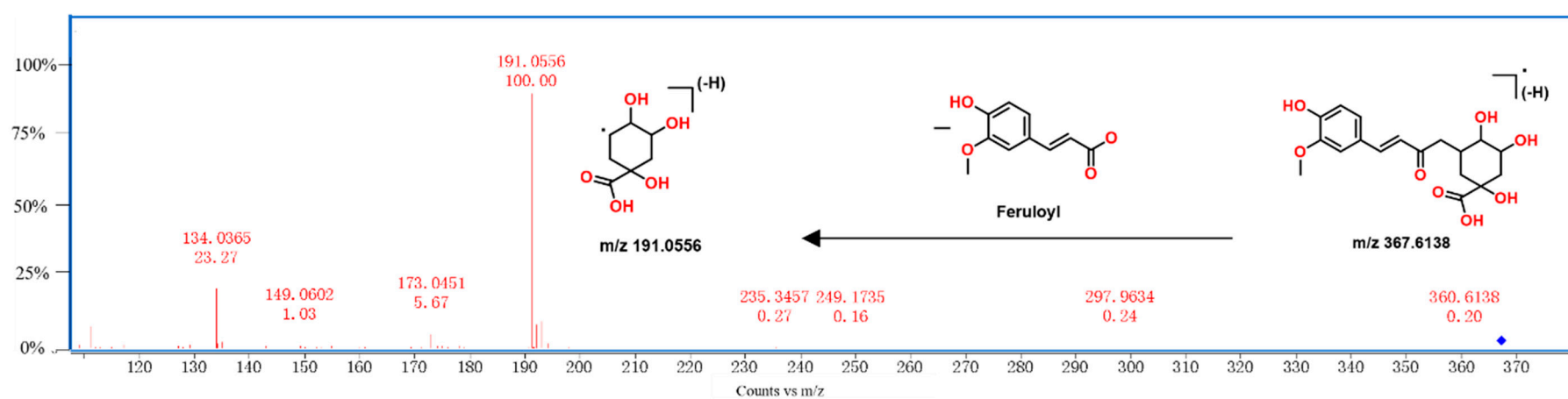
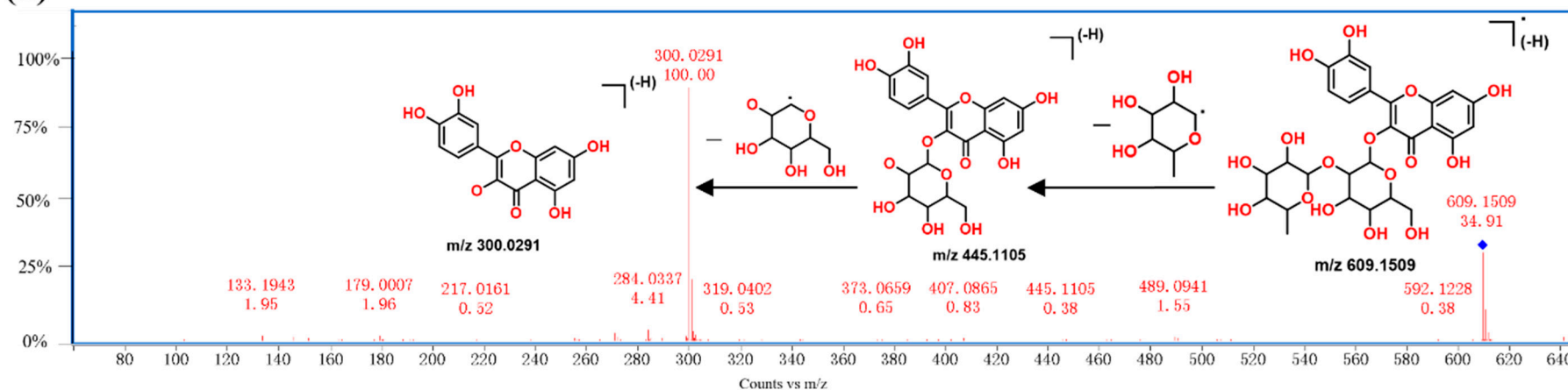


Figure S4

(a)



(b)



(c)

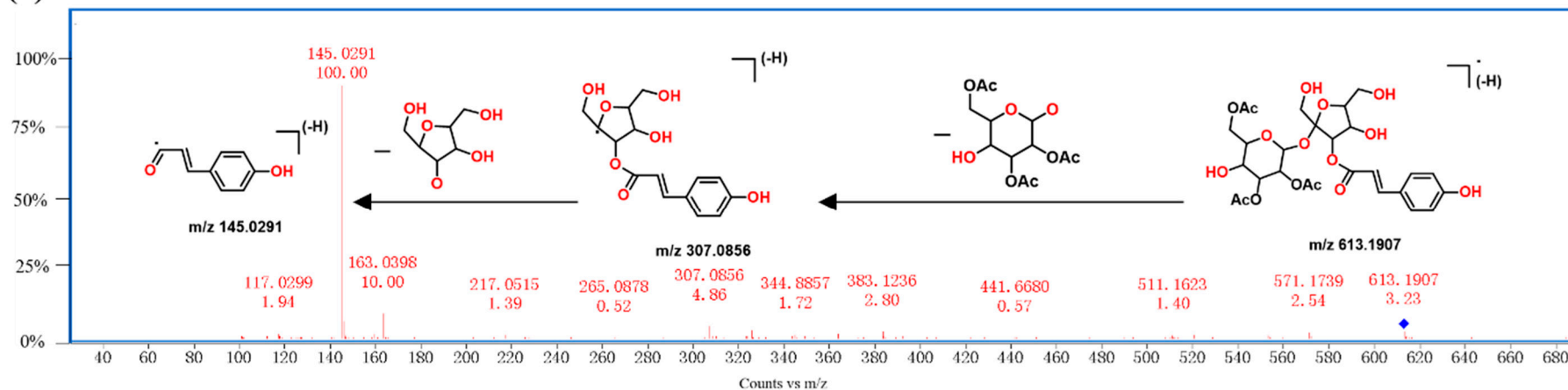


Figure S4. The mass spectra and fragmentation mechanism of 5-O-feruloylquinic acid (a), quercetin-3-O-neohesperidin (b) and mumeose C (c).