molecules

MDPI

Supplementary Materials

LC-MS Metabolite Profiling and the Hypoglycemic Activity of *Morus alba* L. Extracts

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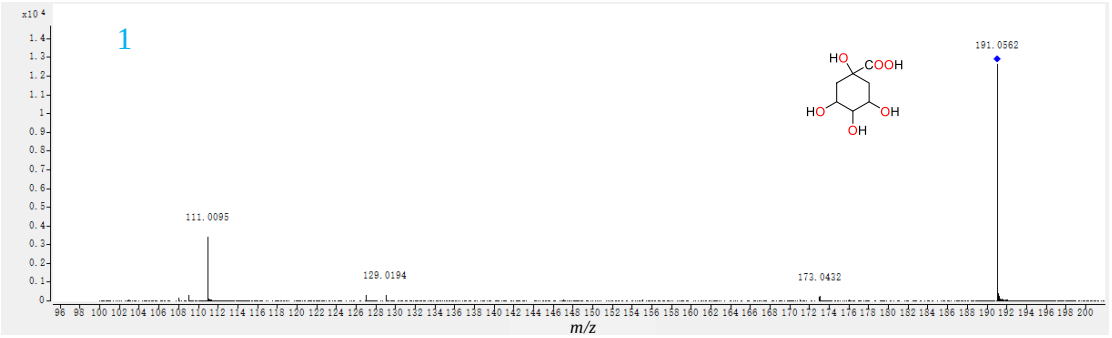
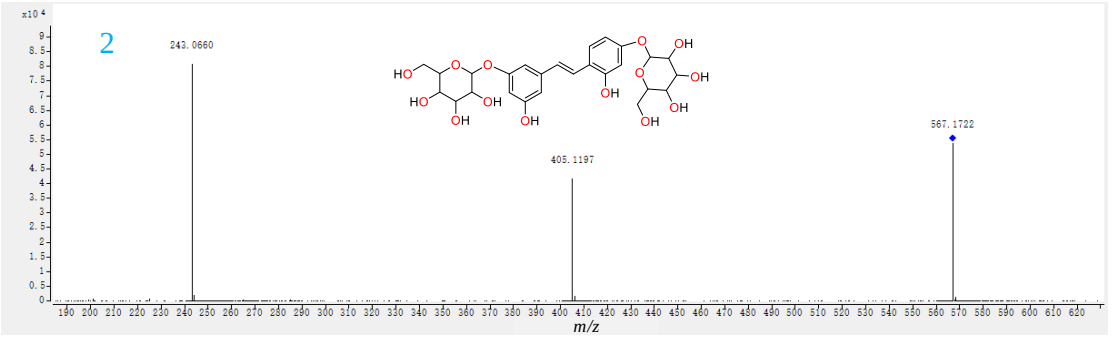
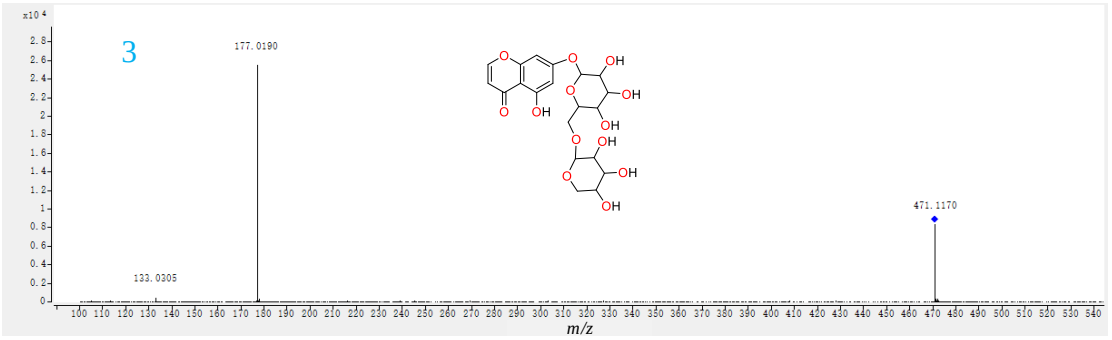
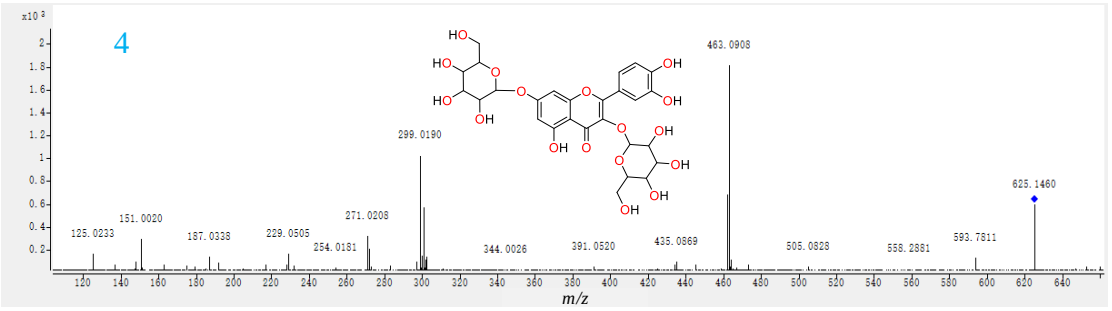
[2] Institute of Chinese Materia Medica, Hunan Academy of Chinese Medicine, 410013 Changsha, China
* Correspondence: zhangshuihan0220@126.com; Tel.: +86-731-84686656

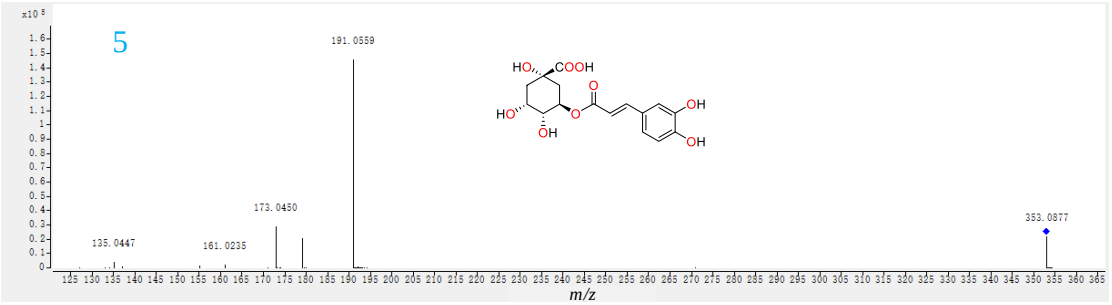
Figure. S1 the MS/MS spectra of compounds 1–60.







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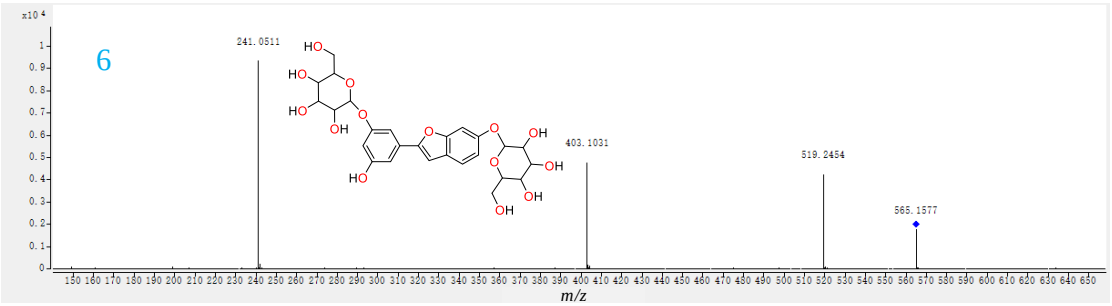
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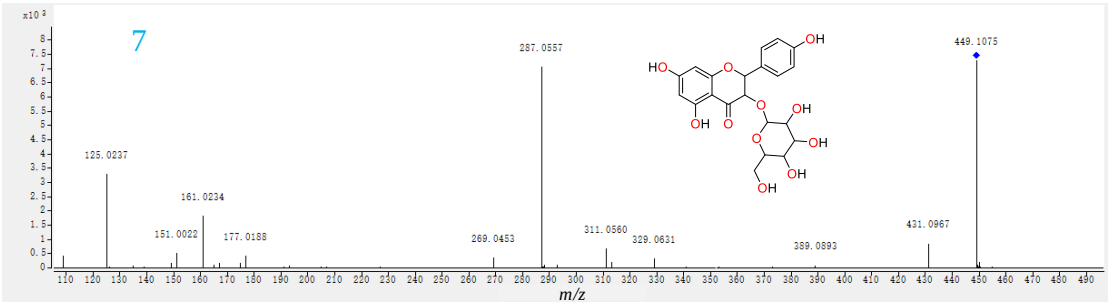
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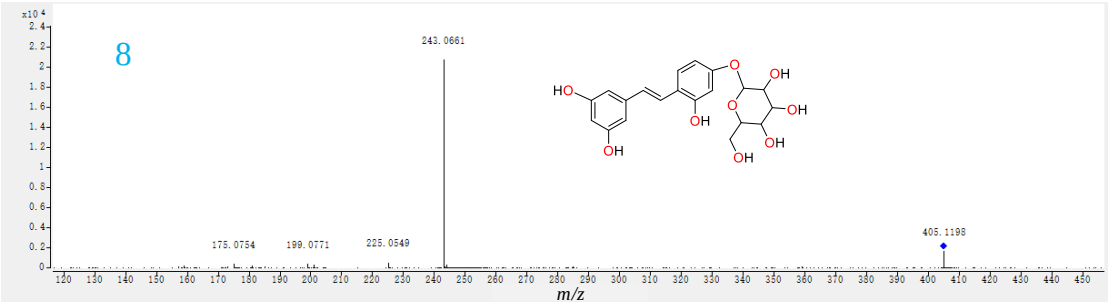
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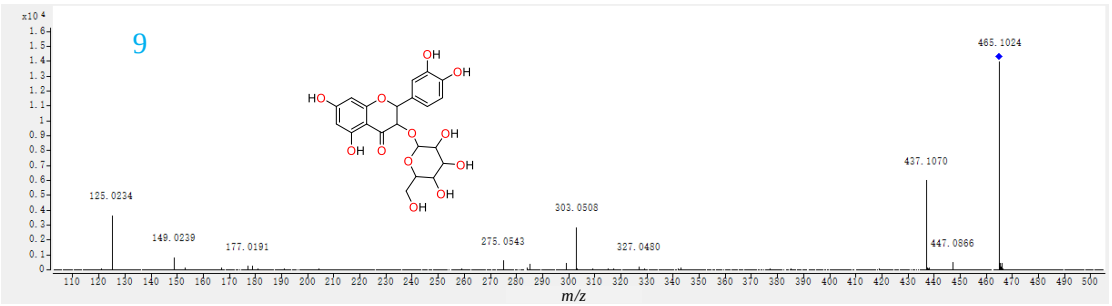
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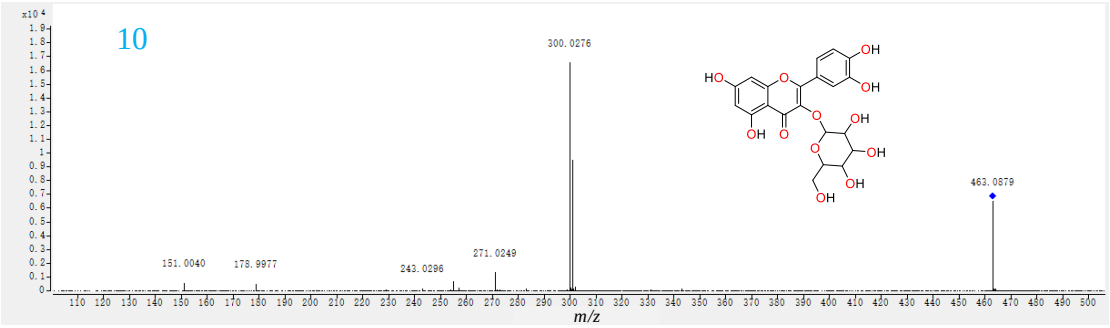
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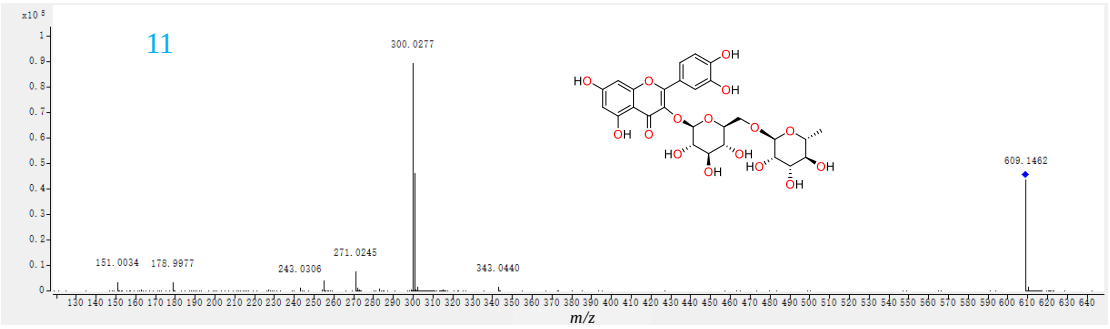
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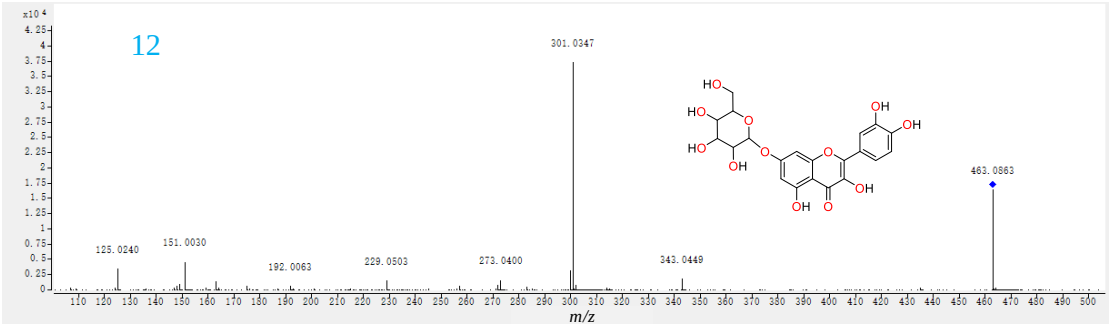
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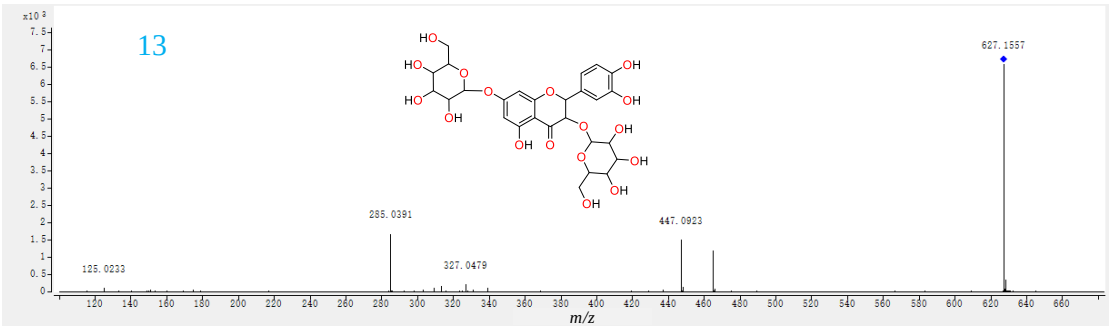
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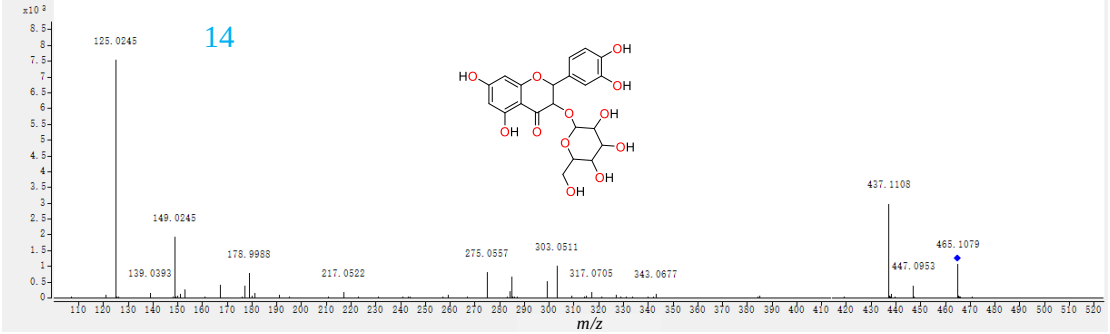
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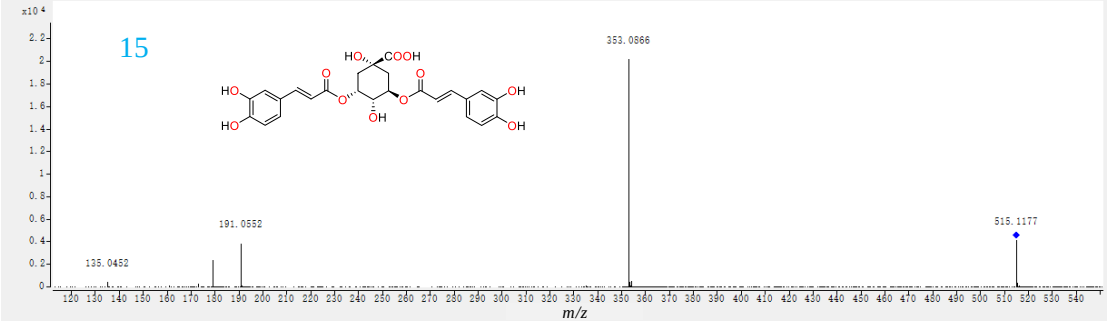
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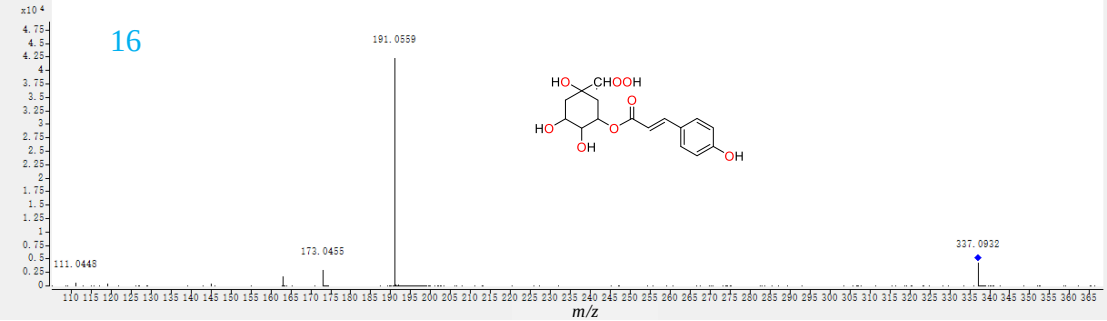
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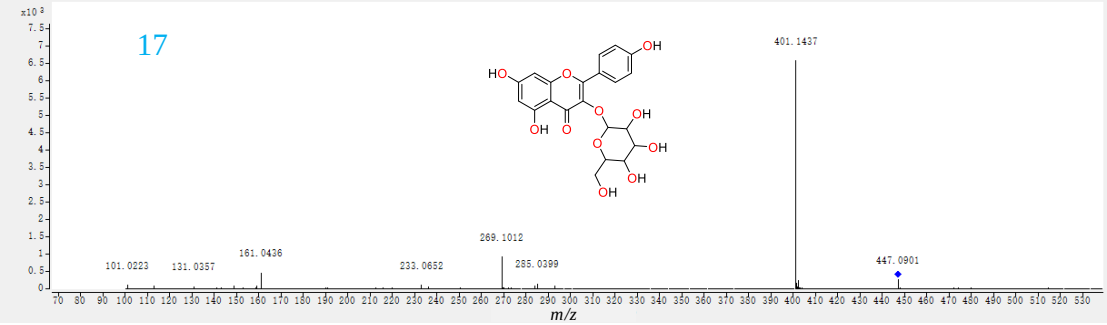
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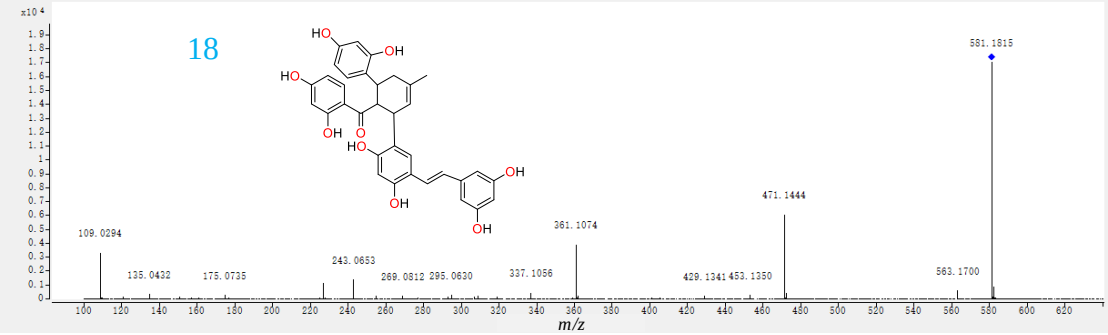
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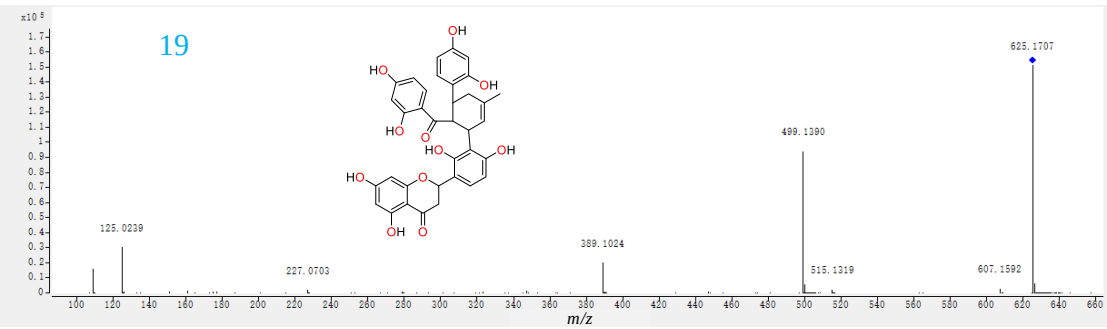
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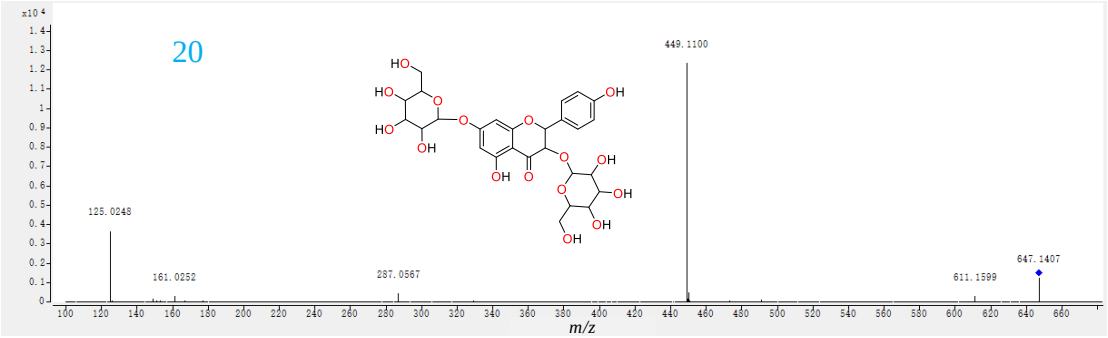
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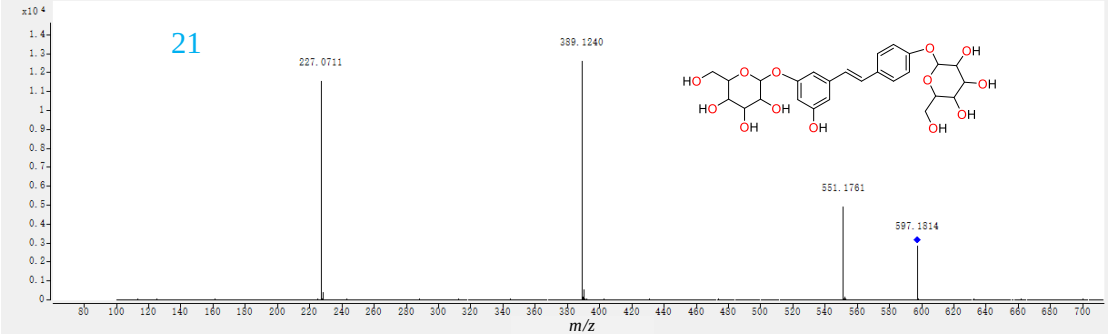
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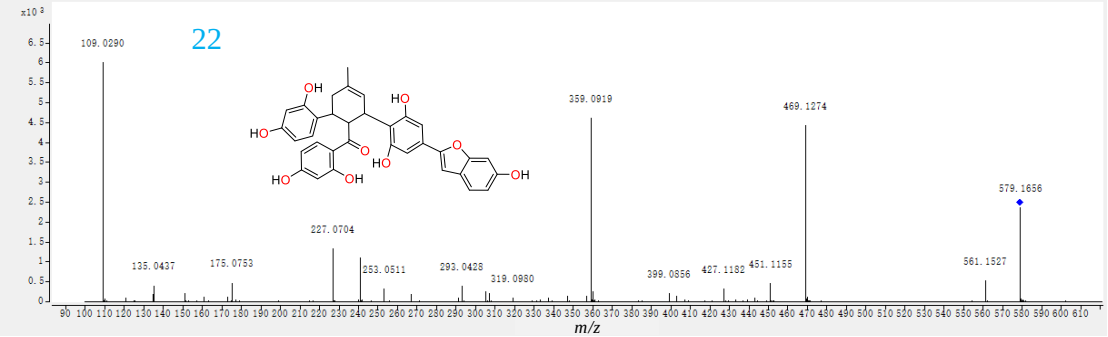
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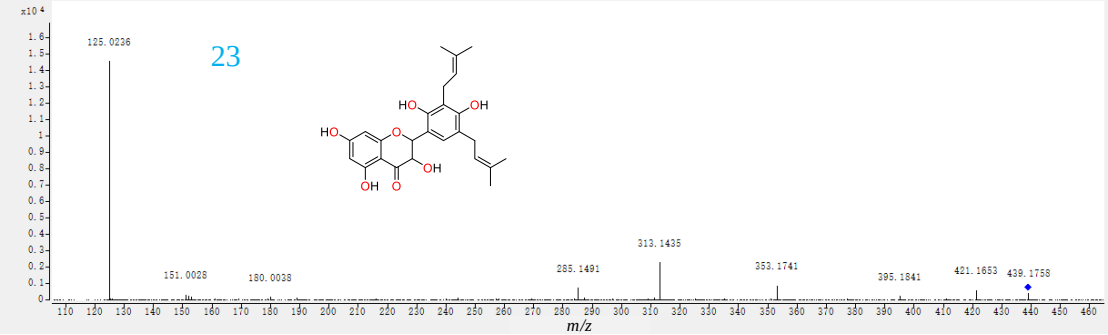
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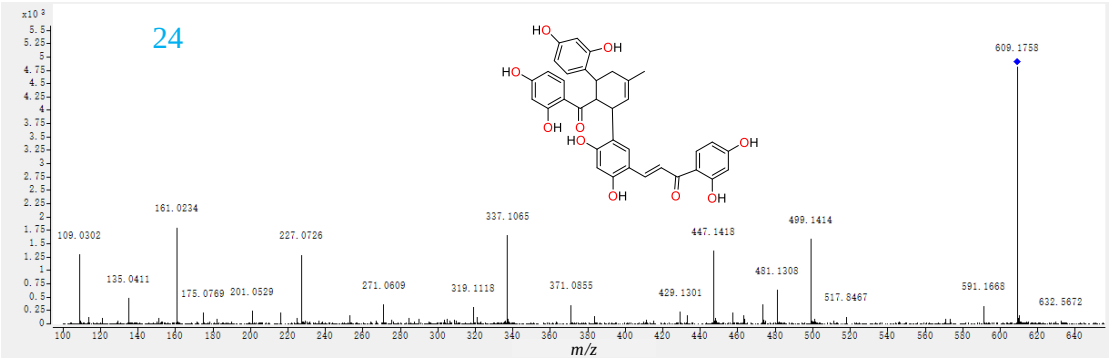
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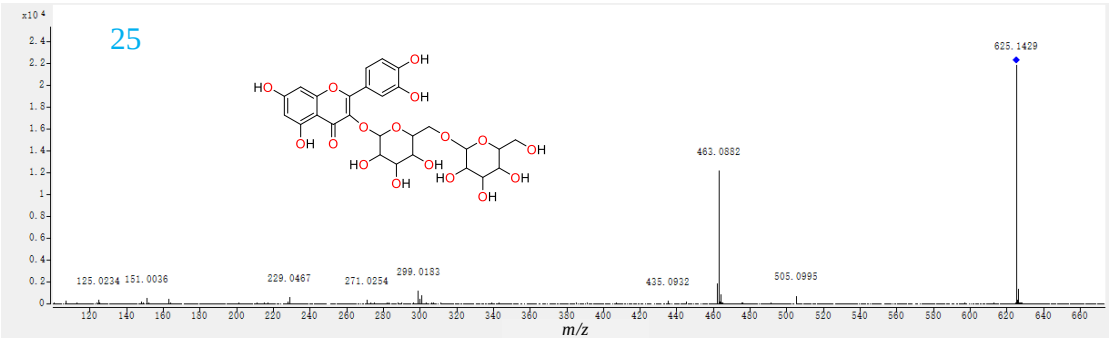
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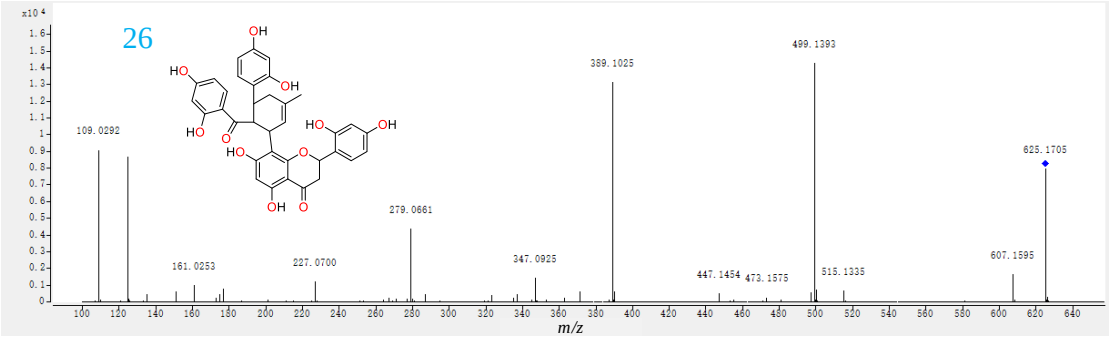
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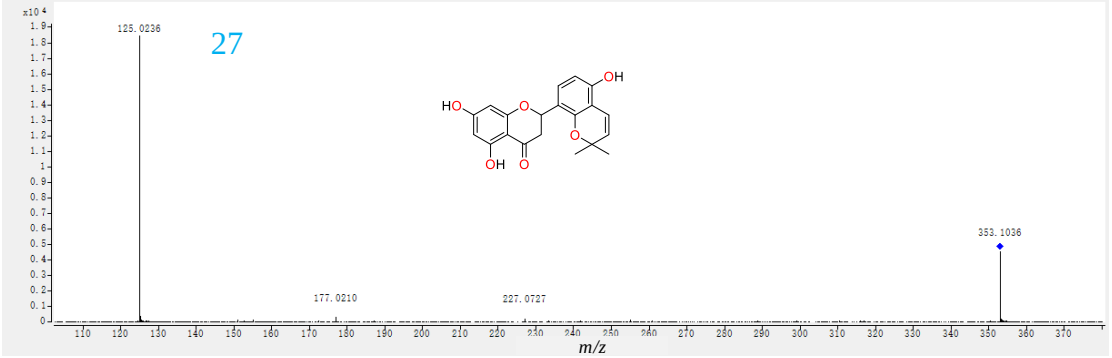
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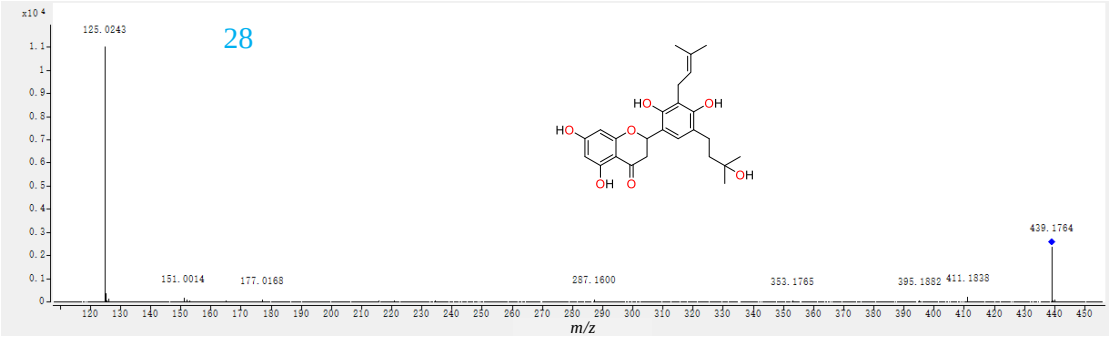
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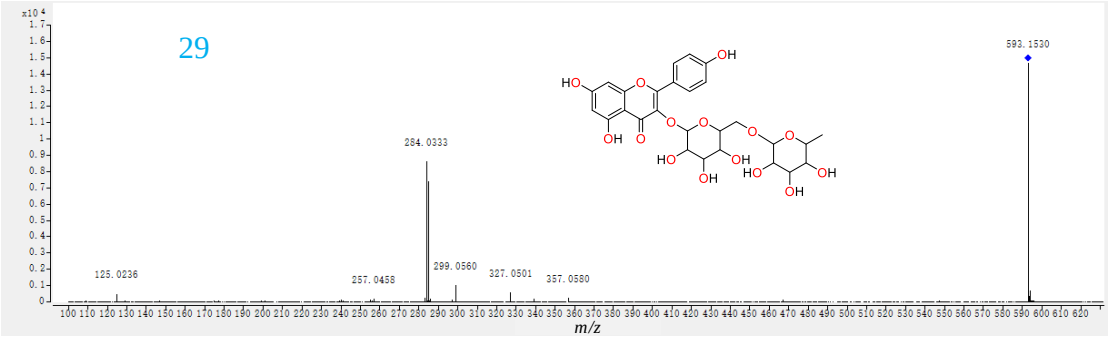
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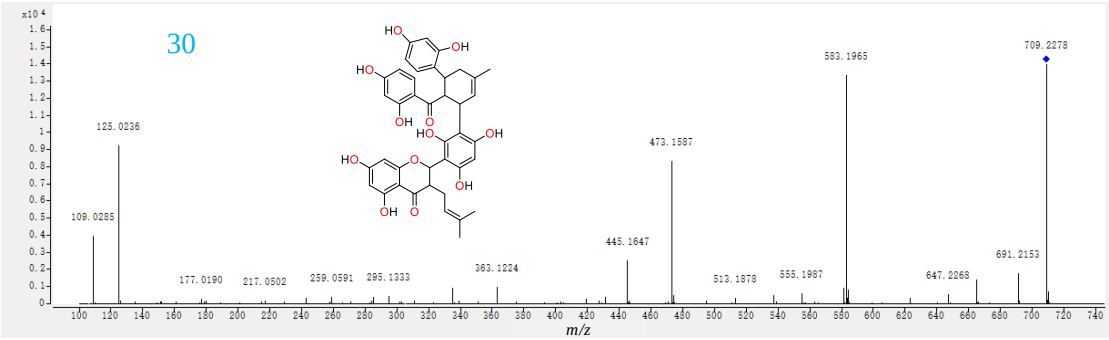
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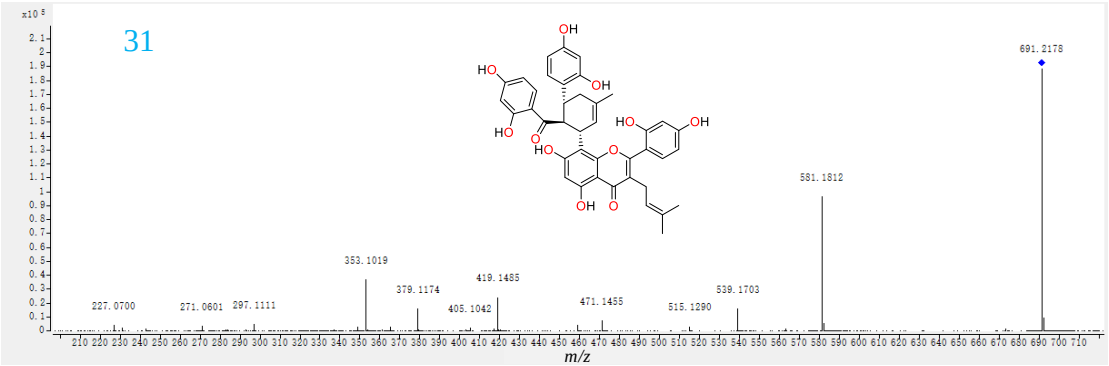
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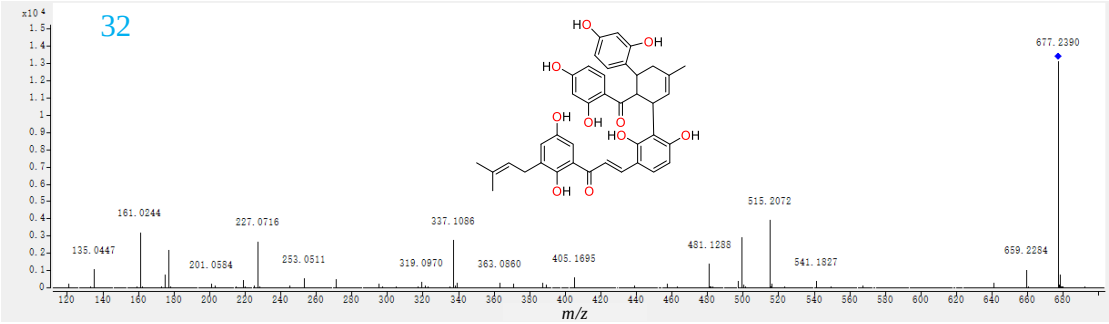
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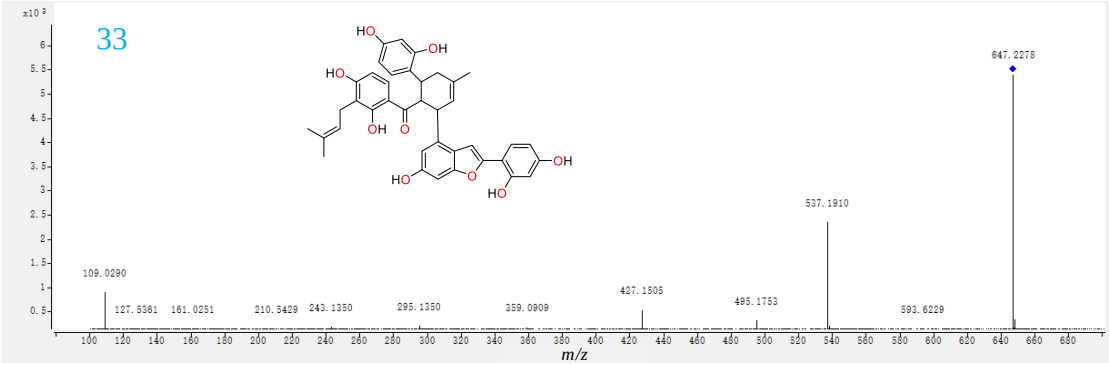
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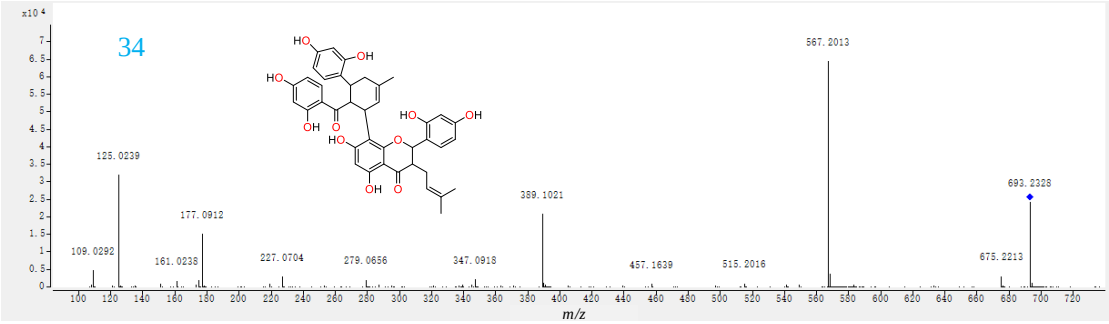
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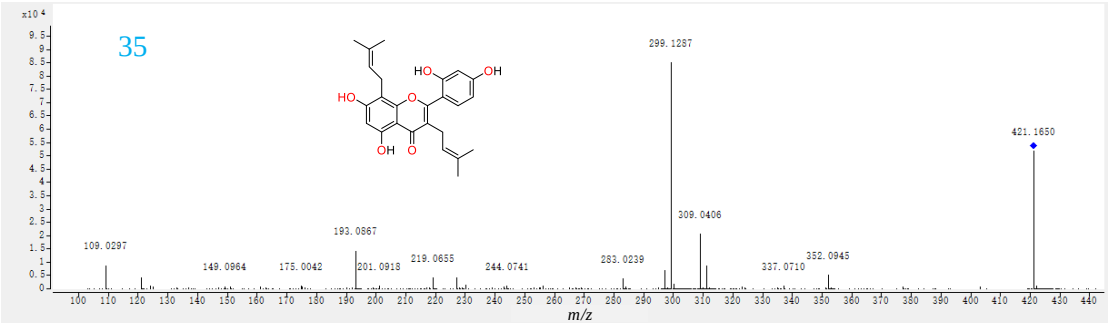
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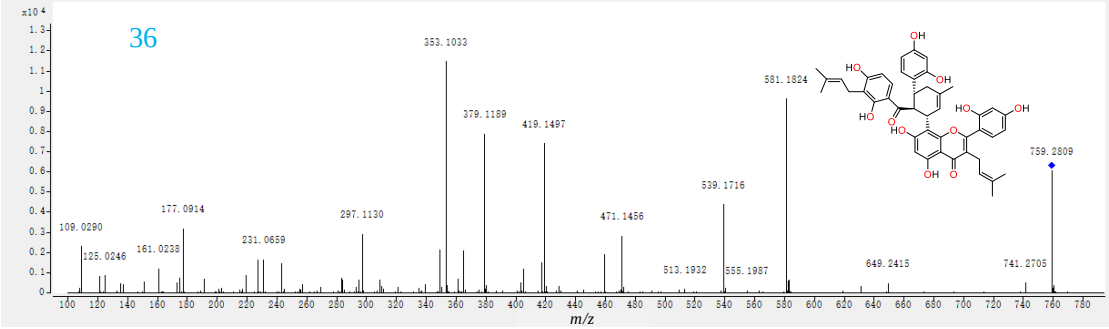
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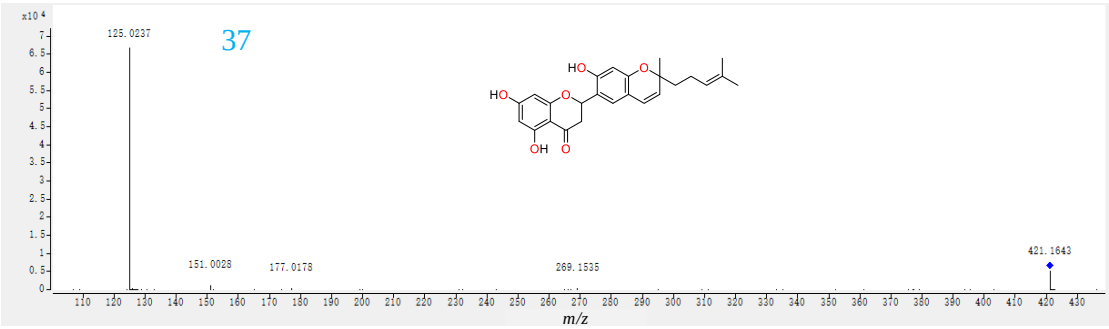
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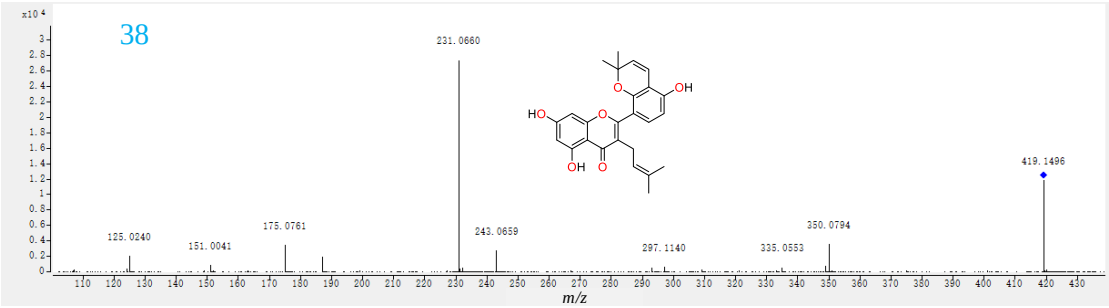
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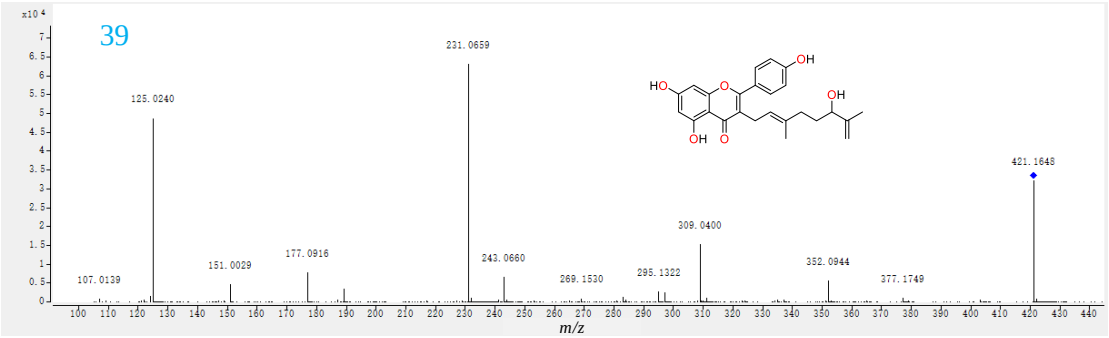
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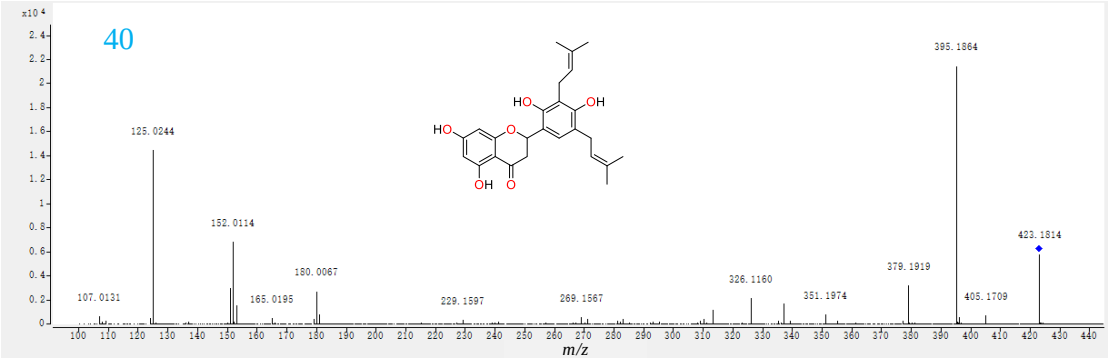
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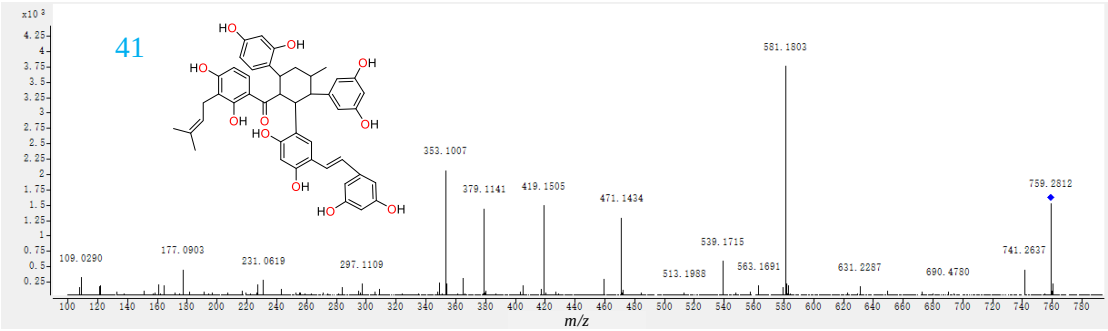
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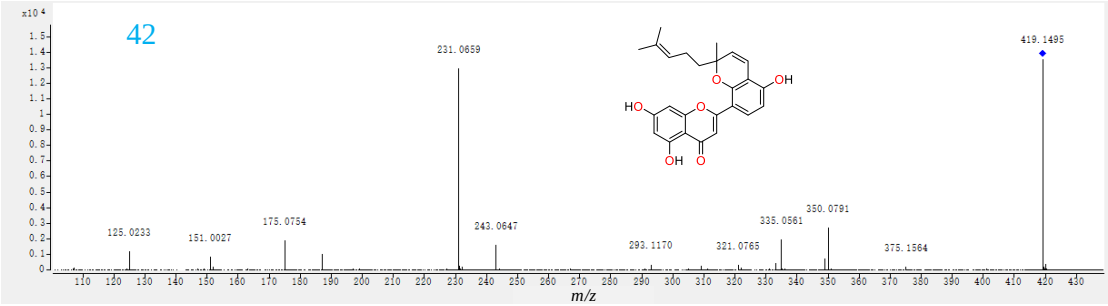
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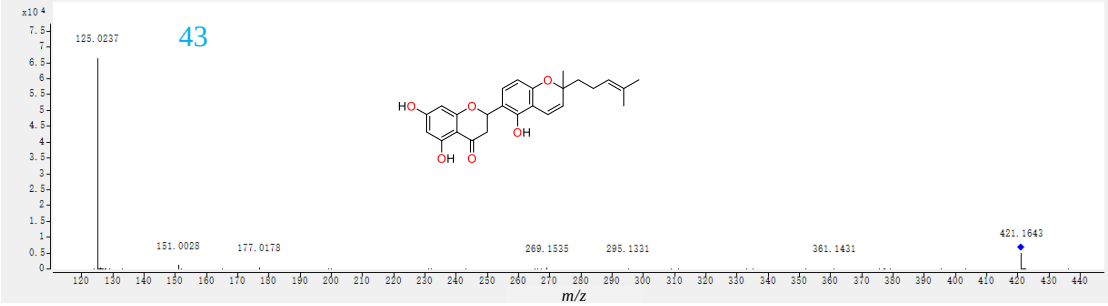
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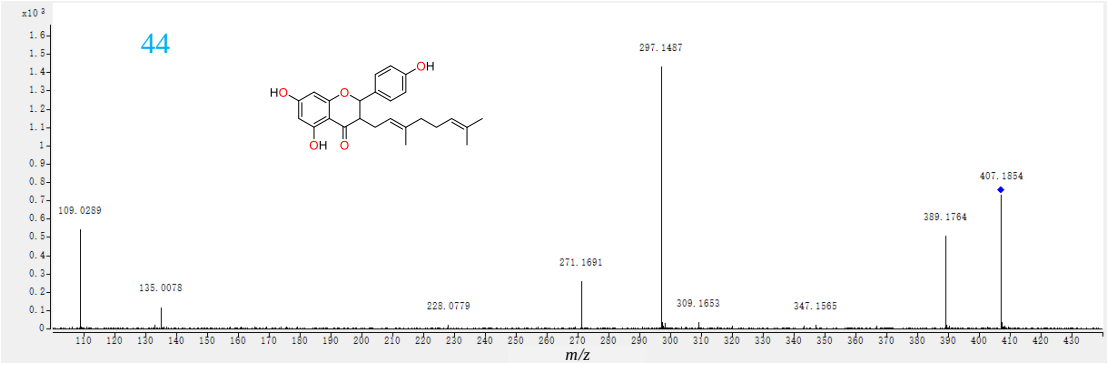
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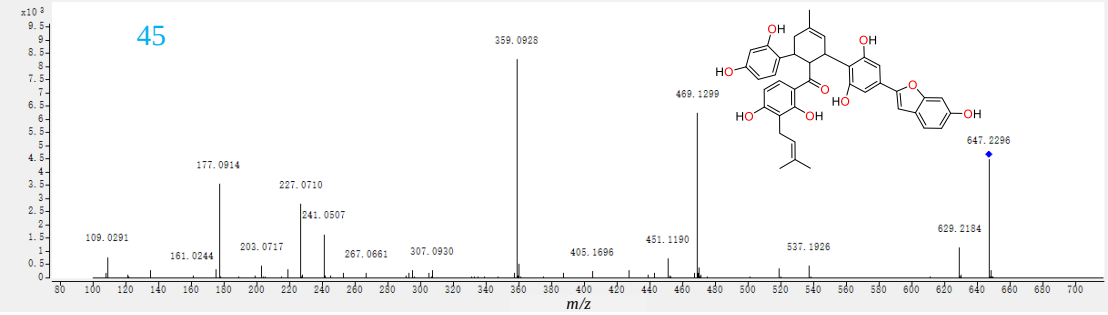
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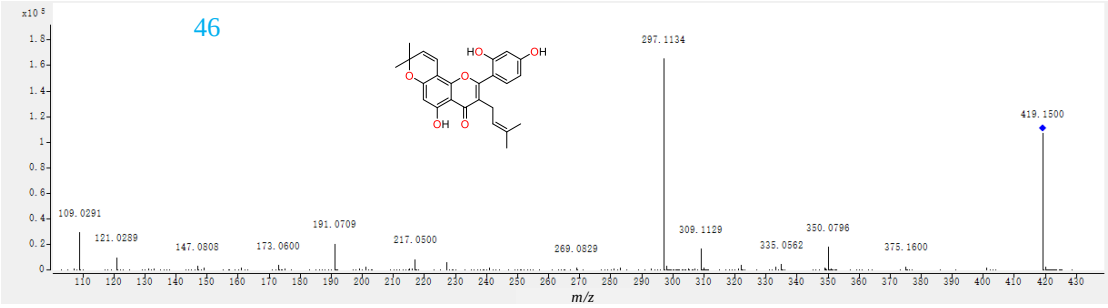
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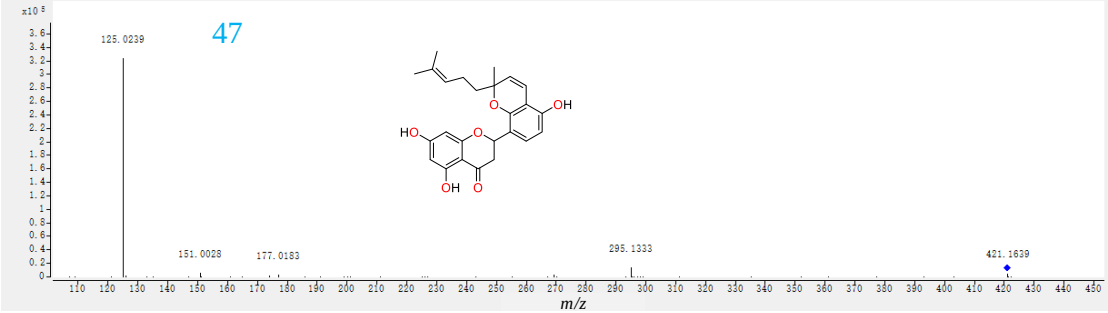
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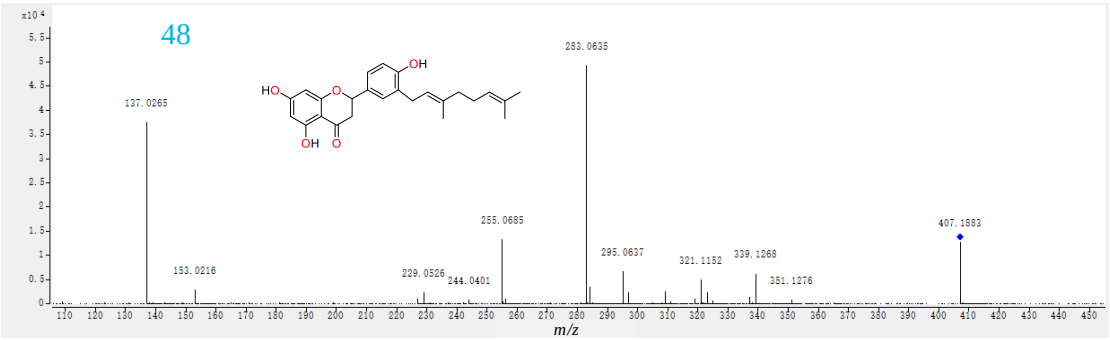
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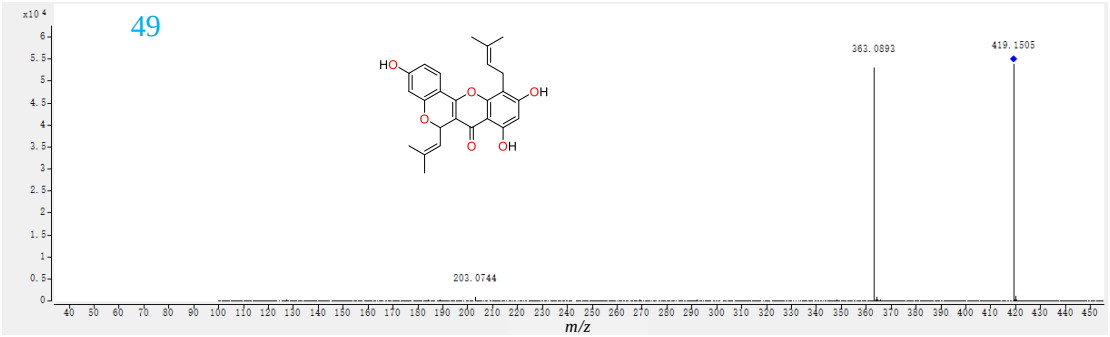
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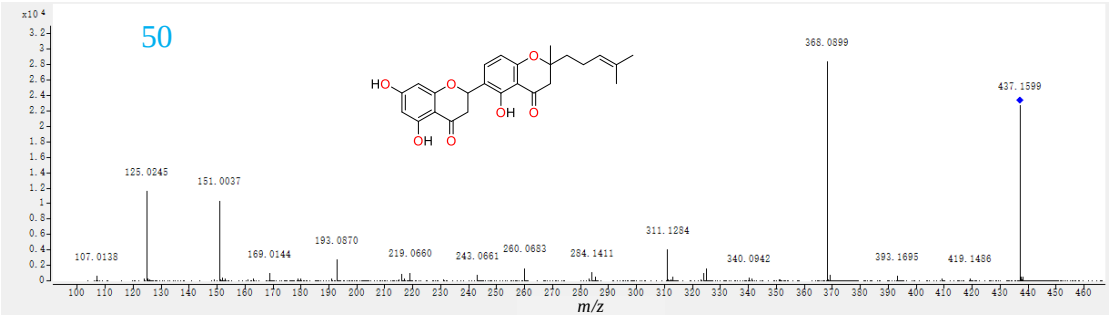
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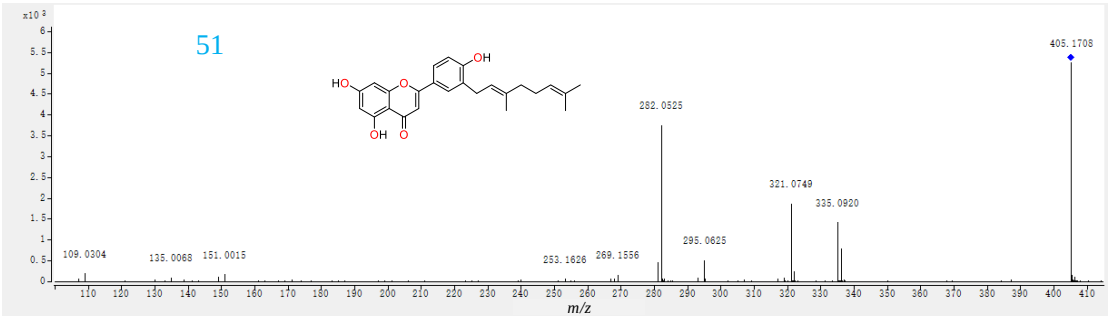
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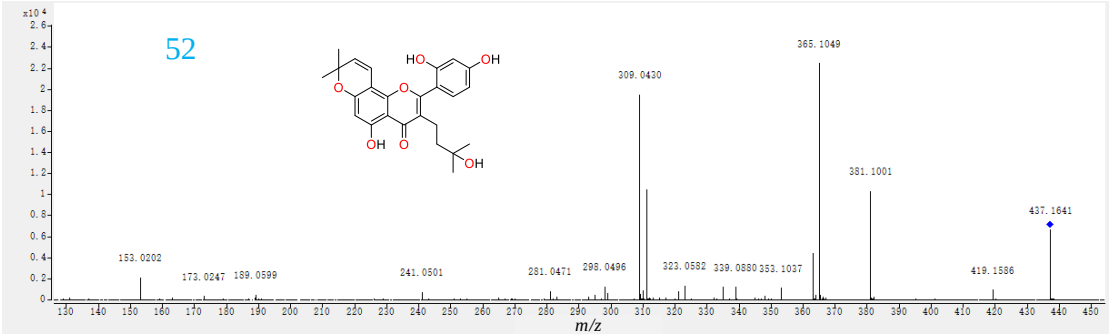
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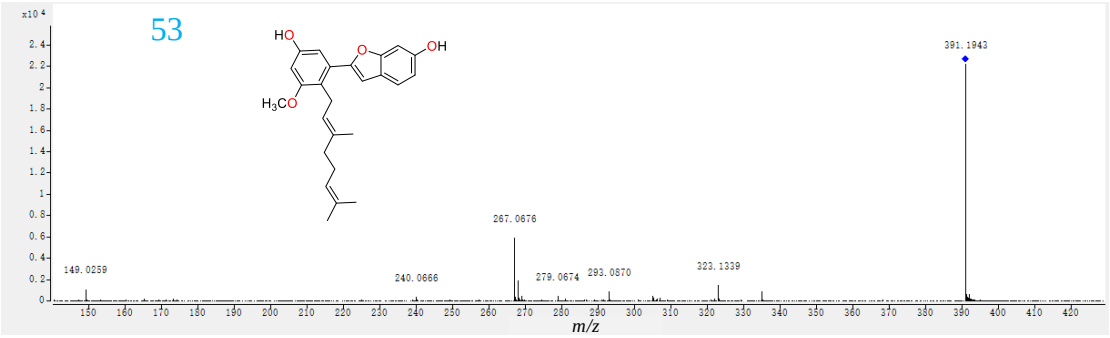
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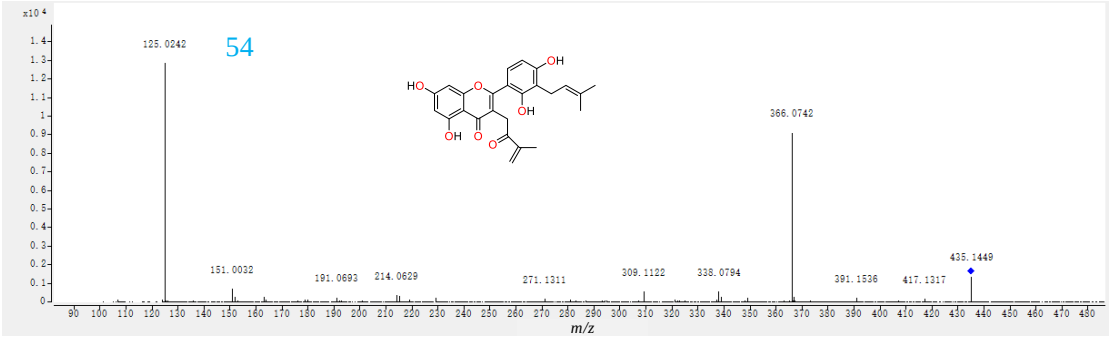
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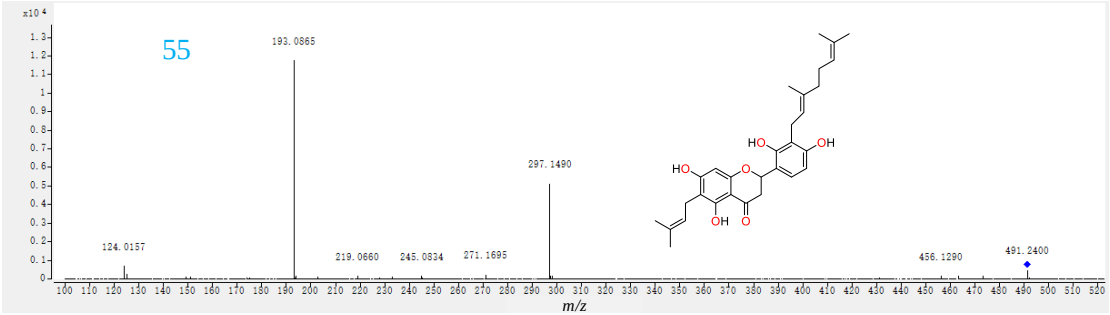
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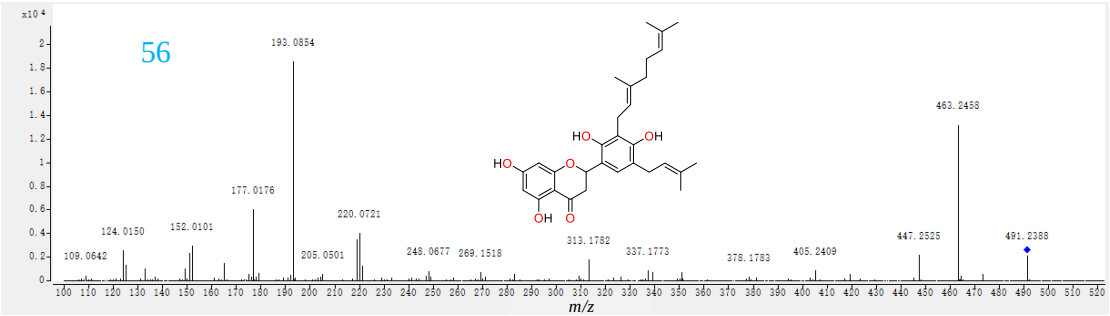
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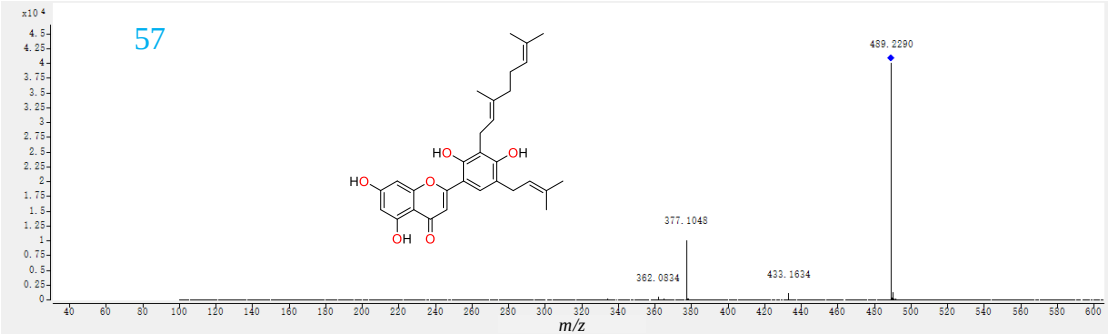
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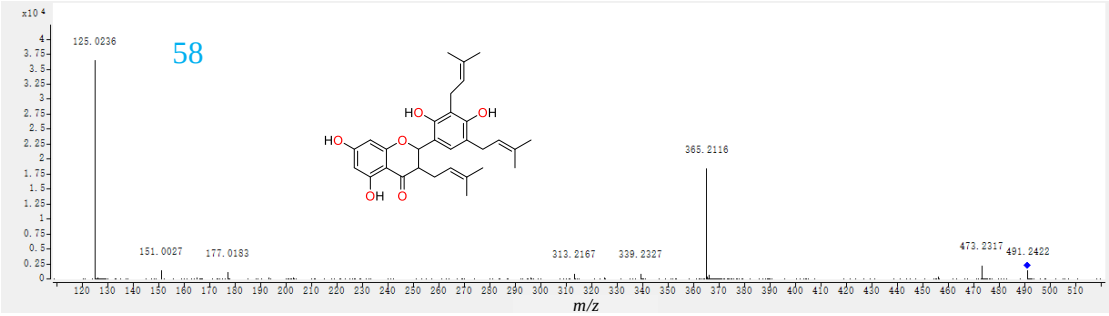
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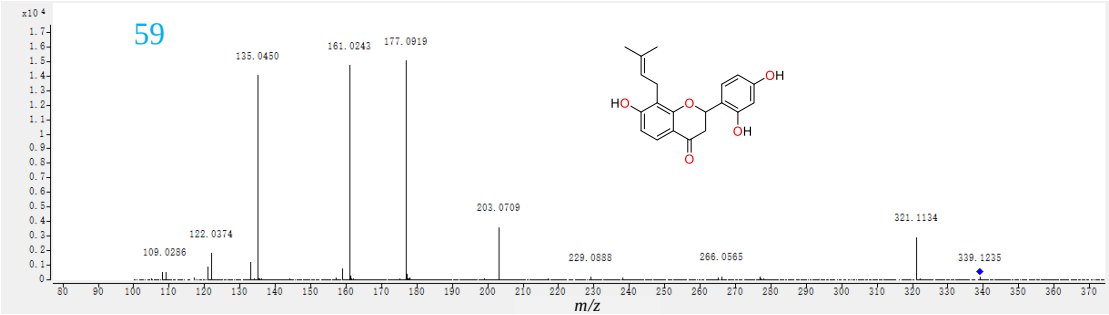
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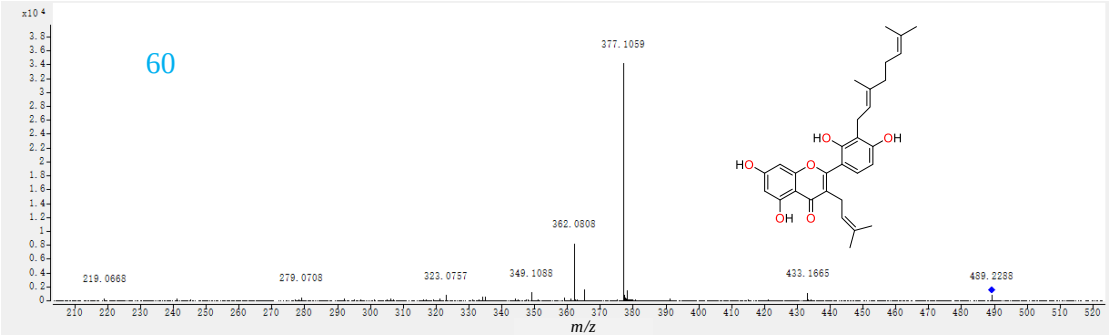
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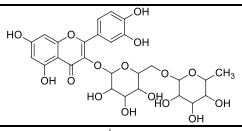
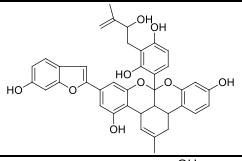
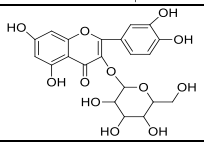
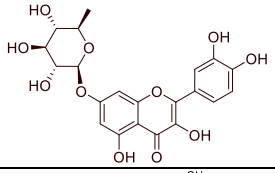
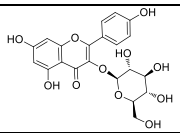
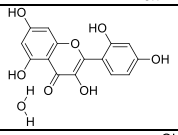
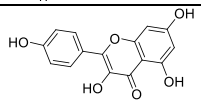
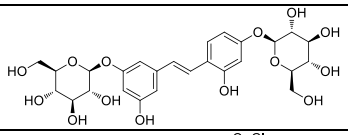
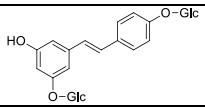
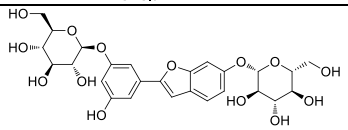
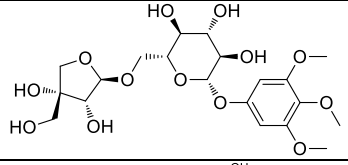
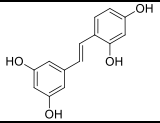
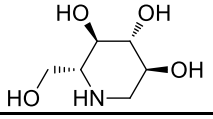
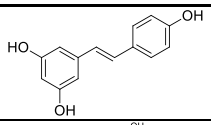
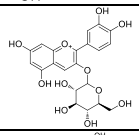
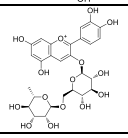
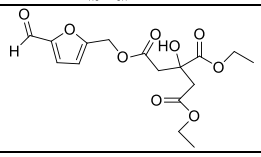
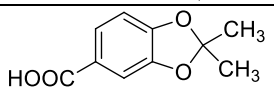
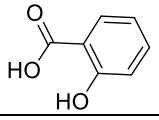
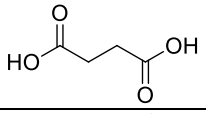
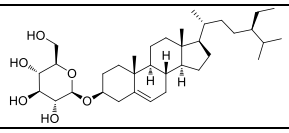
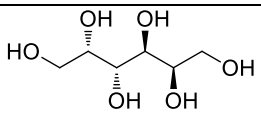
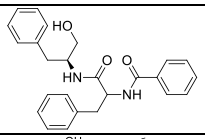
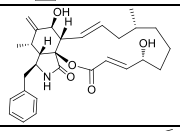
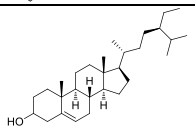
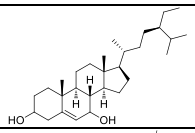
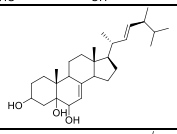
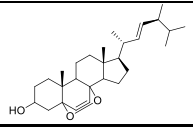
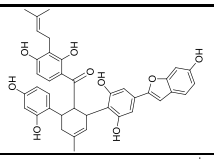
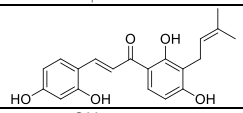
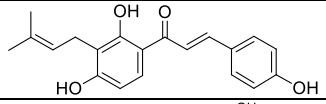
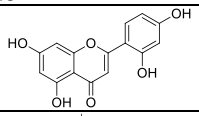
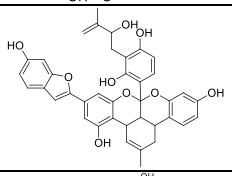
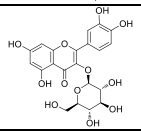
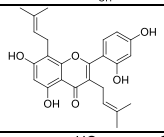
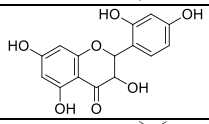
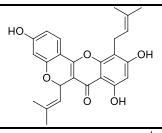
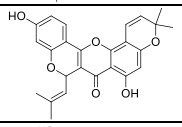
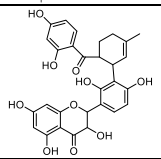
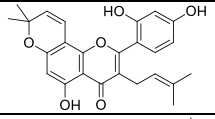
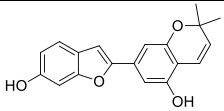
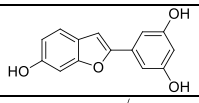
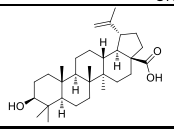
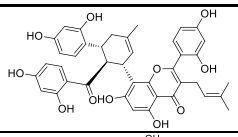
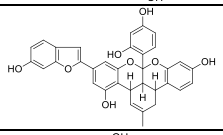
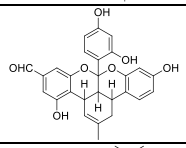
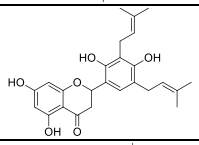
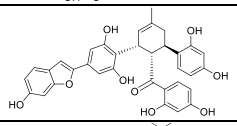
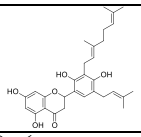
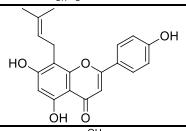
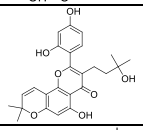
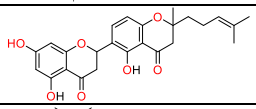
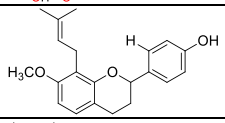
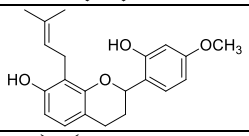
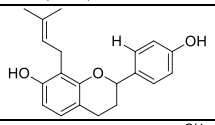
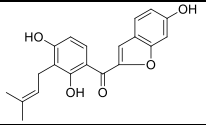
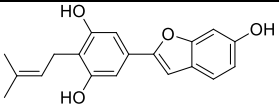
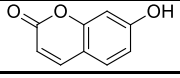
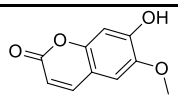
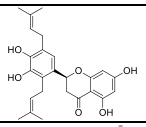
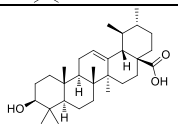
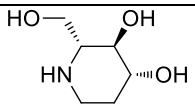
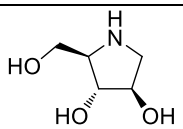
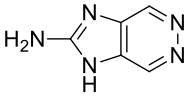
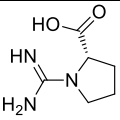
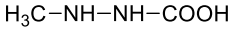
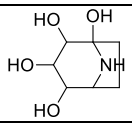
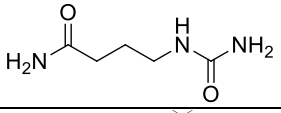
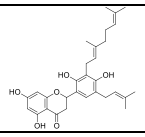
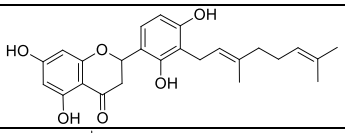
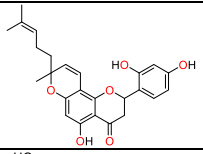
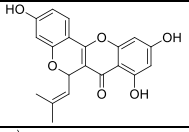
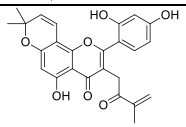
Table S1 The database of reported compounds from the genus of *Morus*.

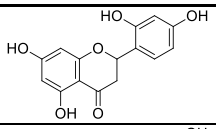
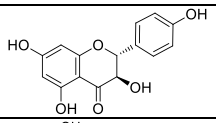
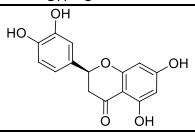
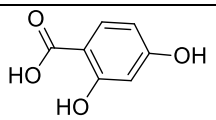
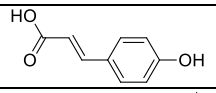
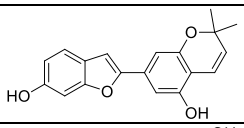
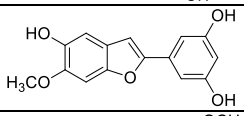
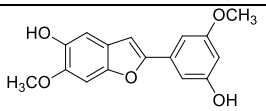
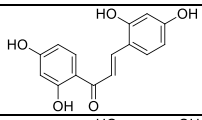
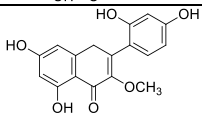
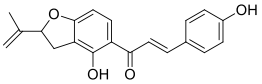
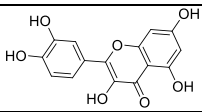
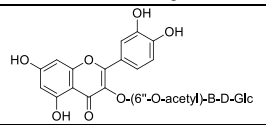
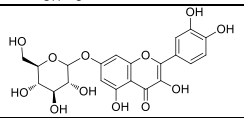
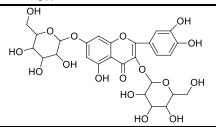
No.	Name	Molecular formula	$[M+H]^+$	$[M-H]^-$	Structure
1	Lutin	$C_{27}H_{30}O_{16}$	611.1612	609.1456	
2	Mulberrofuran F	$C_{39}H_{34}O_9$	647.6898	645.6739	
3	Isoquercitrin	$C_{21}H_{20}O_{12}$	465.1033	463.0877	
4	Hyperosidine	$C_{21}H_{20}O_{11}$	449.1078	447.0927	
5	Astragalin	$C_{21}H_{20}O_{11}$	449.1084	447.0927	
6	Morin	$C_{15}H_{12}O_8$	321.0610	319.0454	
7	Keampferol	$C_{15}H_{10}O_6$	287.0556	285.0399	
8	Muberroside A1	$C_{26}H_{32}O_{14}$	569.1870	567.1714	
9	Muberroside E	$C_{26}H_{32}O_{13}$	553.1921	551.1765	
10	Muberroside F	$C_{26}H_{30}O_{14}$	567.1724	565.1557	
11	Kelampayoside A	$C_{20}H_{30}O_{13}$	479.1765	477.1608	
12	Oxyresveratrol	$C_{14}H_{12}O4$	245.0814	243.0657	
13	DNJ	$C_6H_{13}NO_4$	164.0923	162.0766	

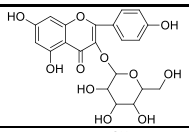
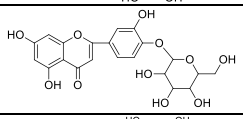
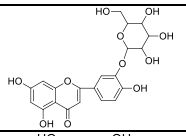
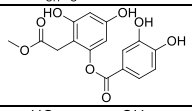
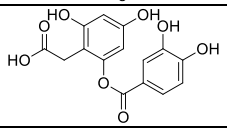
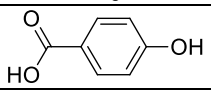
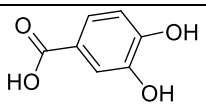
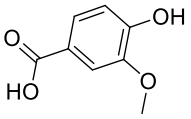
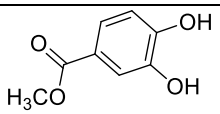
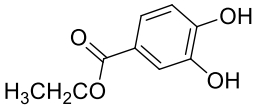
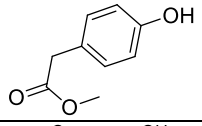
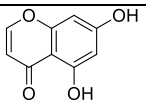
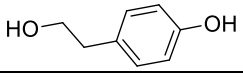
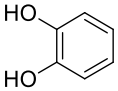
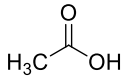
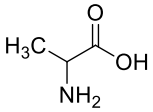
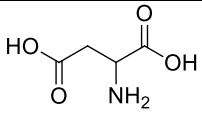
14	Resveratrol	$C_{14}H_{12}O_3$	229.0865	227.0708	
15	Cyanidin-3-*O*-glucoside	$C_{21}H_{21}O_{11}$	449.1078	447.022	
16	Keracyanin	$C_{27}H_{31}O_{15}$	595.1657	593.1501	
17	1-[5-(2-formlfuryl)methyl]dihydrogen2-hydroxypropane-1,2,3-tricarboxylate2,3-diethyl ester	$C_{16}H_{20}O_9$	357.1186	355.1029	
18	3,4-(dimethoxyhydro)cinnamic acid	$C_{10}H_{10}O_4$	195.0657	193.0501	
19	Salicylic acid	$C_7H_6O_3$	139.0395	137.0239	
20	Succinic acid	$C_4H_6O_4$	119.0344	117.0188	
21	Daucoside	$C_{35}H_{60}O_6$	577.4468	575.4312	
22	Dulcitol	$C_6H_{14}O_6$	183.0869	181.0712	
23	Aurantiamide	$C_{25}H_{26}N_2O_3$	403.2022	401.1865	
24	Cytochalasin B	$C_{29}H_{37}NO_5$	480.2750	478.2593	
25	β-sitosterol	$C_{29}H_{50}O$	415.3940	413.3783	
26	7β-hydroxy-sitosterol	$C_{29}H_{50}O_2$	431.3880	429.3733	
27	(22E)-24-methyl-5α-cholesta-7,22-diene-3β,5α,6β-triol	$C_{28}H_{46}O_3$	431.3525	429.3369	
28	(22E)-5α,8α-epidioxyergosta-6,22-dien-3β-ol	$C_{28}H_{44}O_3$	429.3369	427.3212	

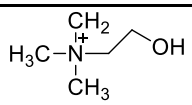
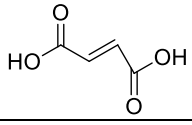
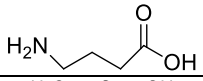
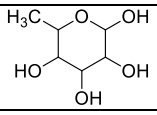
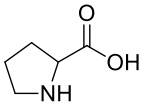
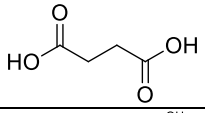
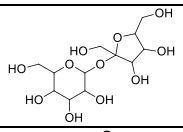
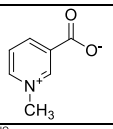
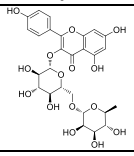
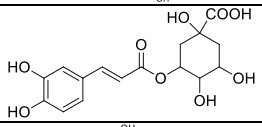
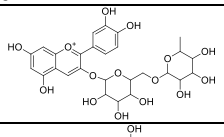
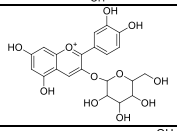
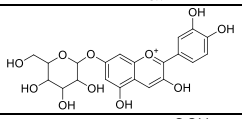
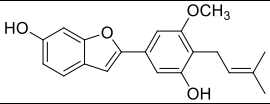
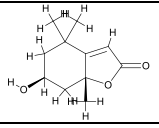
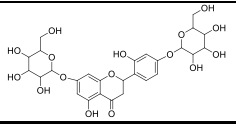
29	Chalcomoracin	$C_{39}H_{36}O_9$	649.2438	647.2281	
30	Morachalcone A	$C_{20}H_{20}O_5$	341.1389	339.1232	
31	Isobavachalcone	$C_{20}H_{20}O_4$	325.1440	323.1283	
32	Norartocarpetin	$C_{15}H_{10}O_6$	287.0556	285.0399	
33	Mulberrofuran F1	$C_{39}H_{34}O_9$	647.2281	645.2125	
34	Isoquercitrin	$C_{21}H_{20}O_{12}$	465.1033	463.0877	
35	Mulberrin	$C_{25}H_{26}O_6$	423.1808	421.1651	
36	Dihydromorin	$C_{15}H_{12}O_7$	305.0661	303.0505	
37	Cyclomulberrin	$C_{25}H_{24}O_6$	421.1651	419.1495	
38	Cyclomulberrochromene	$C_{25}H_{22}O_6$	419.1495	417.1338	
39	Cudranin	$C_{29}H_{26}O_{10}$	535.1599	533.1456	
40	Morusin	$C_{25}H_{24}O_6$	421.1651	419.1495	
41	Moracin D	$C_{19}H_{16}O_4$	309.1127	307.0970	
42	Moracin M	$C_{14}H_{10}O_4$	243.0567	241.0501	
43	Betulinic acid	$C_{30}H_{48}O_3$	457.3682	455.3525	

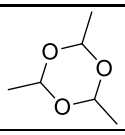
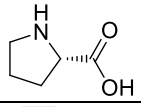
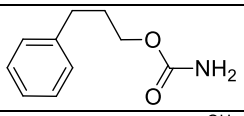
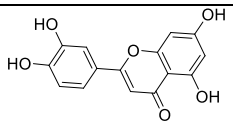
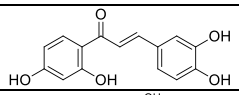
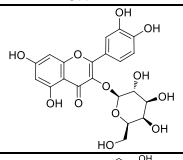
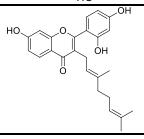
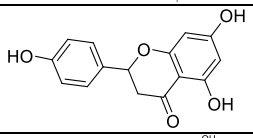
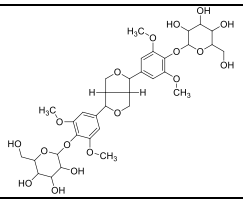
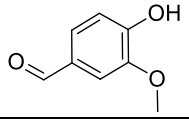
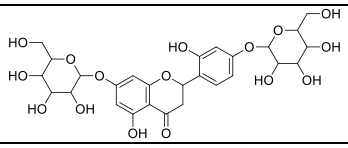
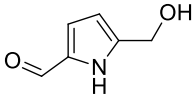
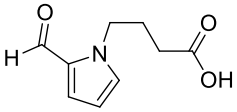
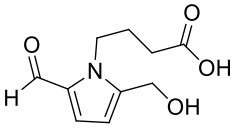
44	Kuwanon G	$C_{40}H_{36}O_{11}$	693.2336	691.2179	
45	Mulberrofuran G	$C_{34}H_{26}O_8$	563.1706	561.1549	
47	Soroceal B	$C_{27}H_{22}O_7$	459.1444	457.1287	
48	Sanggenol Q	$C_{25}H_{28}O_6$	425.1964	423.1808	
49	Mulberrofuran C	$C_{34}H_{28}O_9$	581.1812	579.1655	
50	Sanggenol P	$C_{30}H_{36}O_6$	493.2590	491.2434	
51	Licoflavone C	$C_{20}H_{18}O_5$	339.1232	337.1076	
52	Morusinol	$C_{25}H_{26}O_7$	439.1757	437.1600	
53	Sanggenon N	$C_{25}H_{26}O_6$	439.1751	437.1600	
54	(2S)-4′-hydroxy-7-meth-oxy-8-prenylflavan	$C_{21}H_{24}O_3$	325.1804	323.1647	
55	2′,7-dihydroxy-4′-methoxy-8- prenylflavan	$C_{21}H_{24}O_4$	341.1753	339.1596	
56	Brosimine B	$C_{20}H_{22}O_3$	311.1647	309.1491	
58	Morachalcone B	$C_{20}H_{20}O_5$	339.1232	337.1076	
59	moracin C	C19H18O4	311.1283	309.1127	
60	7-hydroxycoumarin	$C_9H_6O_3$	163.0395	161.0239	

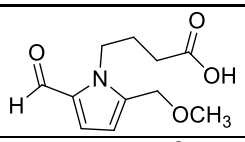
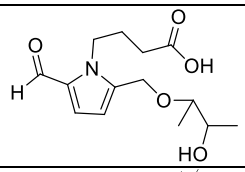
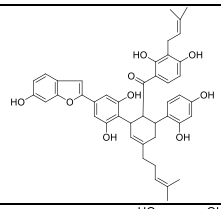
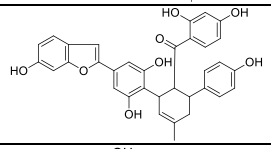
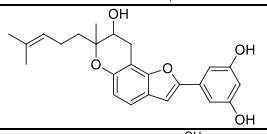
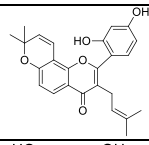
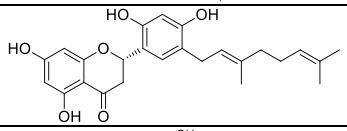
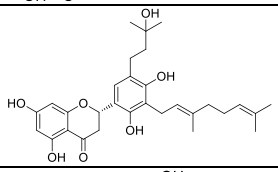
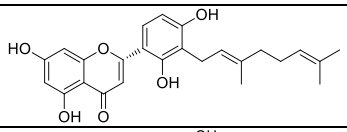
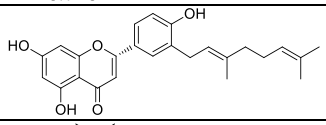
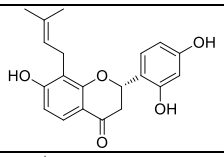
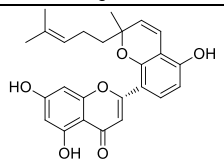
61	Scopoletin	$C_{10}H_8O_4$	193.0501	191.0344	
62	Sigmoidin A	$C_{25}H_{28}O_6$	425.1964	423.1808	
63	Ursolic acid	$C_{30}H_{48}O_3$	457.3682	455.3525	
64	Fagomine	$C_6H_{13}NO_3$	148.0974		
65	1,4-dideoxy-1,4-iminno-d-arabinitol	$C_5H_{11}NO_3$	134.0817		
66	Zarzissine	$C_5H_5N_5$	136.0623		
67	Amidinoproline	$C_6H_{11}N_3O_2$	158.0930		
68	2-methyl-hydrazinecarbox-yli cacid	$C_2H_6N_2O_2$	91.0508		
69	Norscopolamine	$C_7H_{12}NO_4$	176.0923		
70	Grateloupinami	$C_5H_{11}N_3O_2$	146.0930		
71	SanggenolP	$C_{30}H_{36}O_6$	493.2590	491.2434	
72	Mulberrofuran G	$C_{34}H_{26}O_8$	563.1706	561.1549	
73	Sanggenol A	$C_{25}H_{28}O_6$	425.1964	423.1808	
74	Sanggenol L	$C_{25}H_{26}O_6$	423.1808	421.1651	
75	Cyclocommunol	$C_{20}H_{16}O_6$	353.1025	351.0869	
76	Morusone	$C_{25}H_{22}O_7$	435.1444	433.1287	

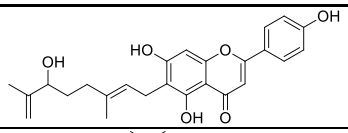
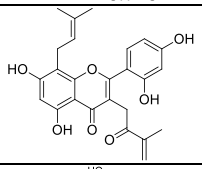
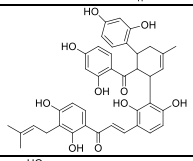
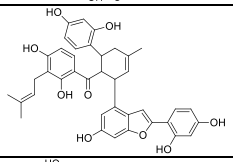
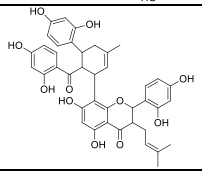
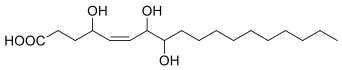
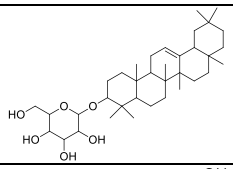
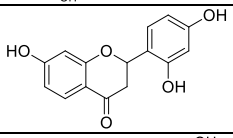
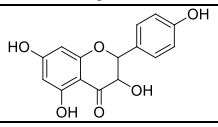
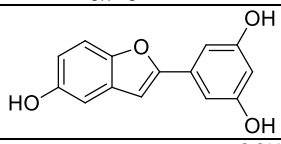
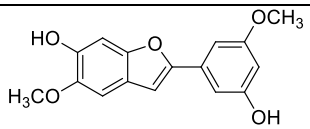
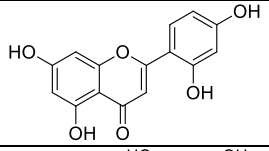
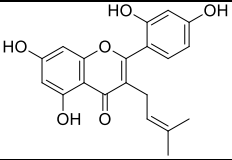
77	Steppogenin	$C_{15}H_{12}O_6$	289.0712	287.0556	
78	Dihydrokaempferol	$C_{15}H_{12}O_6$	289.0712	287.0556	
79	Eriodictyol	$C_{15}H_{12}O_6$	289.0712	287.0556	
80	2,4-dihydroxybenzoic acid	$C_7H_6O_4$	155.0344	153.0188	
81	*p*-coumaric acid	$C_9H_8O_3$	165.0552	163.0395	
82	Moracin D	$C_{20}H_{18}O_4$	323.1283	321.1127	
82	Moracin J	C15H12O5	273.0763	271.0606	
82	Moracin B	$C_{20}H_{18}O_4$	287.0919	285.0763	
83	2,4,2′ ,4′-tetrahydroxy-chalcone	$C_{15}H_{12}O_5$	273.0763	271.0606	
84	5,7,2′,4′-tetrahydroxy-3-methoxyflavone	$C_{17}H_{14}O_6$	315.0869	313.0712	
85	(2E)-1-[2,3-dihydro-4-hydroxy-2-(1-methylethenyl)-5-benzofuranyl]-3-(4-hydroxyphenyl)-1-propanone	$C_{20}H_{18}O_4$	323.1283	321.1127	
86	Quercetin	$C_{15}H_{10}O_7$	303.0505	301.0348	
87	3-O-(6′′-O-acetyl)-β-D-glucopyranoside	$C_{23}H_{22}O_{13}$	507.1139	506.1060	
88	Isouercetin	$C_{21}H_{20}O_{12}$	465.1033	463.0877	
89	Quercetin 3,7-di-O-b-D-glucopyranoside	$C_{27}H_{30}O_{17}$	627.1561	625.1405	

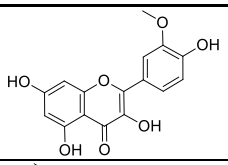
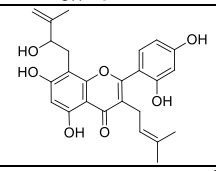
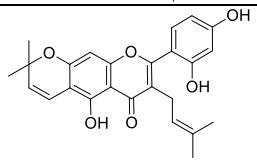
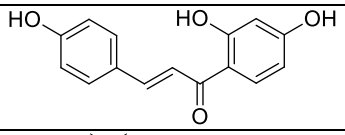
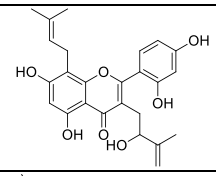
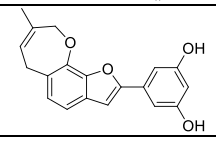
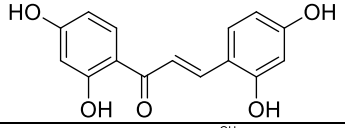
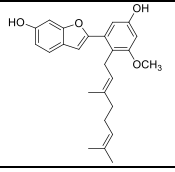
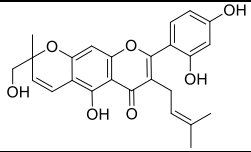
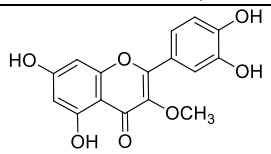
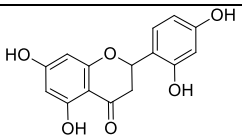
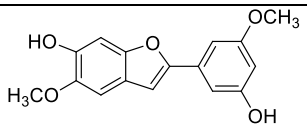
90	Kaempferol 3-O-b-D-glucopyranoside	$C_{21}H_{20}O_{11}$	449.1084	447.0927	
91	5,7,3′-trihydroxy-flavanone-4′-O-b-D-glucopyranoside	$C_{21}H_{20}O_{11}$	449.1084	447.0927	
92	5,7,4′-trihydroxy-flavanone-3′-O-b-D-glucopyranoside	$C_{21}H_{20}O_{11}$	449.1084	447.0927	
93	Jaboticabin	$C_{16}H_{14}O_8$	335.0767	333.0610	
94	2-O-(3,4-dihydroxybenzoyl)-2,4,6-trihydroxyphenylacetic acid	$C_{15}H_{12}O_8$	321.0610	319.0454	
95	p-hydroxybenzoic acid	$C_7H_6O_3$	139.0395	137.0239	
96	Protocatechuic acid	$C_7H_6O_4$	155.0344	153.0188	
97	vanillic acid	$C_8H_8O_4$	169.0501	167.0344	
98	vanillic acid methyl ester	$C_8H_8O_4$	169.0501	167.0344	
99	protocatechuic acid ethyl ester	$C_9H_{10}O_4$	183.0657	181.0501	
100	4-hydroxyphenylacetic acid methyl ester	$C_9H_{10}O_3$	167.0708	165.0552	
101	5,7-dihydroxychromone	$C_9H_6O_4$	179.0344	177.0188	
102	Tyrosol	$C_8H_{10}O_2$	139.0759	137.0603	
103	Pyrocatechol	$C_6H_6O_2$	111.0446	109.0290	
104	Acetic acid	$C_2H_4O_2$	61.0290	59.1033	
105	Alanine	$C_3H_7NO_2$			
106	Asparagine	$C_4H_7NO_4$			

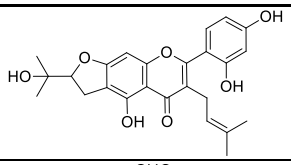
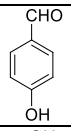
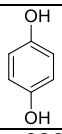
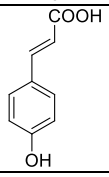
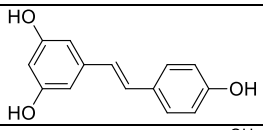
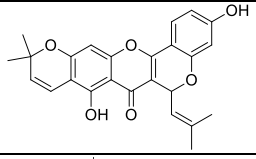
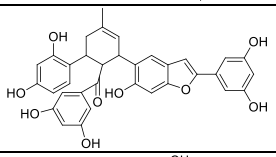
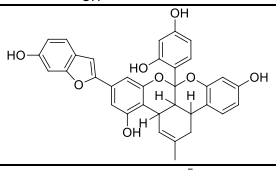
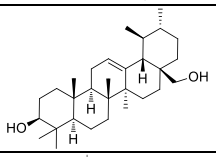
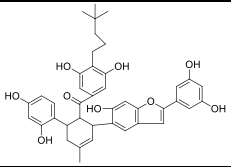
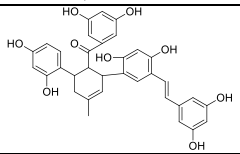
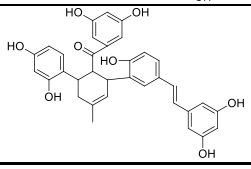
107	Choline	$C_5H_{13}NO_4^+$			
108	Fumaric acid	$C_4H_4O_4$			
109	GABA	$C_4H_9NO_4$			
110	Glucose	$C_6H_{12}O_5$	165.0763	163.0606	
111	Proline	$C_5H_9NO_2$	116.0712	114.0555	
112	Succinic acid	$C_4H_6O_4$	119.0344	117.0188	
113	Sucrose	$C_{12}H_{22}O_{11}$	343.1240	341.1084	
114	Trigonelline	$C_7H_7NO_2$	138.0555	136.0399	
115	Kaempferol 3-*O*-rutinoside	$C_{27}H_{30}O_{15}$	595.1663	593.1506	
116	5-*O*-caffeoylquinic acid	$C_{16}H_{18}O_{19}$	355.1029	353.0873	
117	3-*O*-(6′′-*O*-a-rhamnopyranosyl-b-glucopyranoside)	$C_{27}H_{31}O_{15}$	595.1663		
118	Cyanidin 3-*O*-b-glucopyranoside	$C_{21}H_{21}O_{11}$	449.1078		
119	Cyanidin 7-O-b-glucopyranoside	$C_{21}H_{21}O_{11}$	449.1078		
120	Artoindonesianin O	$C_{20}H_{20}O_4$	325.1440	323.1283	
121	Loliolide	$C_{11}H_{16}O_3$	197.1178	195.1021	
123	Steppogenin-7,4′-di- O-β-D-glucosiade	$C_{27}H_{32}O_{16}$	613.1769	611.1612	

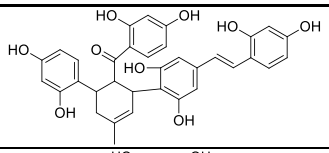
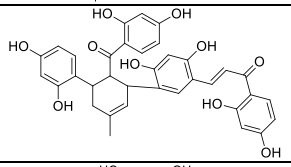
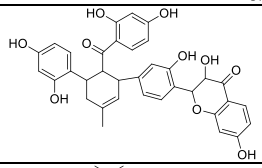
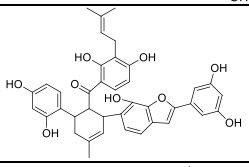
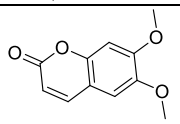
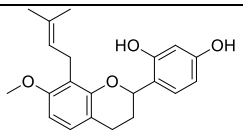
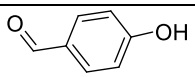
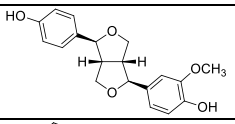
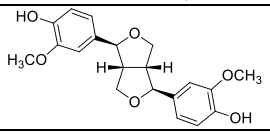
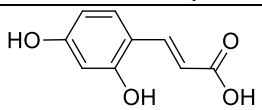
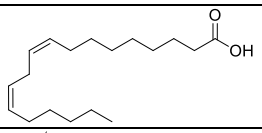
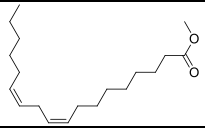
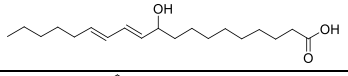
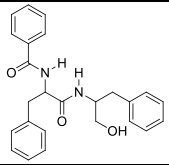
124	Aldehyde	$C_6H_{12}O_3$	133.0865	131.0708	
125	DL-Proline	$C_5H_9NO_2$	116.0712		
126	Phenprobamate	$C_{10}H_{13}NO_2$	180.1025		
127	Luteolin	$C_{15}H_{10}O_6$	287.0556	285.0399	
128	Butein	$C_{15}H_{12}O_5$	273.0763	271.0606	
129	Hyperoside	$C_{21}H_{20}O_{12}$	465.1033	463.0877	
130	Rubraflavone a	$C_{25}H_{26}O_5$	407.1858	405.1702	
131	Naringenin	$C_{15}H_{12}O_5$	273.0763	271.0606	
132	Liriodendrin	$C_{34}H_{46}O_{18}$	743.2762	741.2606	
133	Vanillin	$C_8H_8O_3$	153.0552	151.0395	
134	Steppogenin-7,4'-di-O-β-D-glucosiade	$C_{27}H_{32}O_{16}$	613.1769	611.1612	
135	5-(hydroxymethyl)-1H-pyrrole-2-carboxaldehyde	$C_6H_7NO_2$	126.0555	124.0399	
136	2-formyl-1H-pyrrole1-butanoic acid	$C_9H_{11}NO_3$	182.0817		
137	2-formyl-5-(hydroxymethyl)-1H-pyrrole-1- butanoic acid	$C_{10}H_{13}NO_4$	212.0923		

138	2-formyl-5-(methoxyme-thyl)-1H-pyrrole1-butanoic acid	$C_{11}H_{15}NO_4$	226.1079		
139	Morrole A	C14H21NO5	+Na 306.1317 +H 284.1498		
140	Albasins A	$C_{44}H_{44}O_9$	717.3064	715.2907	
141	Albasin B	$C_{34}H_{28}O_8$	565.1862	563.1706	
142	Albasin C	$C_{24}H_{26}O_5$	395.1858	393.1702	
143	Albasin D	$C_{25}H_{24}O_5$	405.1702	403.1545	
144	Kuwanon E	$C_{25}H_{28}O_6$	425.1964	423.1808	
145	Sanggenon U	$C_{30}H_{38}O_7$	511.2696	509.2539	
146	Sanggenon W	$C_{25}H_{26}O_6$	422.1729	420.1573	
147	Kuwanon S	$C_{25}H_{26}O_5$	407.1858	405.1702	
148	Euchrenone a7	$C_{20}H_{20}O_5$	341.1389	339.1232	
149	Sanggenon V	$C_{25}H_{24}O_6$	421.1651	419.1495	

150	(7″R)-(−)-6-(7″-Hydroxy-3″,8″-dimethyl-2″,8″-octa-dien-1″-yl)apigenin	$C_{25}H_{26}O_6$	423.1808	421.1651	
151	10-Oxomornigrol F	$C_{25}H_{24}O_7$	437.1600	435.1444	
152	Ramumorin A	$C_{40}H_{38}O_{10}$	679.2543	677.2387	
153	Ramumorin B	$C_{39}H_{36}O_9$	649.2438	647.2281	
154	kuwanon G	$C_{40}H_{38}O_{11}$	695.2492	693.2336	
155	(4S,7S,8R)-Trihydroxyocta-deca-5Z-enoic acid	$C_{18}H_{34}O_5$	449331.2484	329.2328	
156	β-amyrin glucopyranoside	$C_{36}H_{60}O_6$	589.4468	587.4312	
157	2′,4′,7-trihydroxyflavone	$C_{15}H_{12}O_5$	273.0763	271.0606	
158	3,4′,5,7- tetrahydroflavone	$C_{15}H_{12}O_6$	289.0712	287.0556	
159	5-(5-hydroxybenzofuran-2-yl)benzen-1,3-diol	$C_{14}H_{10}O_4$	243.0567	241.0501	
160	5-methoxymorican M	$C_{20}H_{18}O_4$	287.0919	285.0763	
161	Norartocarpetin	$C_{15}H_{10}O_6$	287.0556	285.0399	
162	Albanin A	C20H18O6	355.1182	353.1025	

163	Isohamnetin	$C_{16}H_{12}O_7$	317.0661	315.0505	
164	Mornigrol F	$C_{25}H_{26}O_7$	439.1757	437.1600	
165	Cudraflavone B	$C_{25}H_{24}O_6$	421.1651	419.1495	
166	Isoliquiritigenin	$C_{15}H_{12}O_4$	257.0814	255.0657	
167	Mornigrol E	$C_{25}H_{26}O_7$	439.1757	437.1600	
168	Moracin G	$C_{19}H_{16}O_4$	309.1127	307.0970	
169	2,2′,4,4′-tetrahydroxychal-cone	$C_{15}H_{12}O_5$	273.0763	271.0606	
170	Mulberrofuran A	$C_{25}H_{28}O_4$	393.2066	391.1909	
171	2-(2,4-dihydrophenyl)-5-hydroxy-8-(hydroxyme-thyl)-8-methyl-3-(3-me-thyl-2-butenyl)-(9CI)	$C_{25}H_{24}O_7$	437.1600	435.1444	
172	3- methoxyquercetin	$C_{16}H_{12}O_7$	317.0661	315.0505	
173	Norartocarpanone	$C_{15}H_{12}O_6$	289.0712	287.0556	
174	5-methoxymorican M	$C_{16}H_{14}O_5$	287.0919	285.0763	

175	Mulberranol	$C_{25}H_{26}O_7$	439.1757	437.1600	
176	p-hydroxybenzadehyde	$C_7H_6O_2$	123.0446	121.0290	
177	p-hydroxyphenol	$C_6H_6O_2$	111.0446	109.0290	
178	p-courmaric acid	$C_9H_8O_3$	165.0552	163.0395	
179	2′ ,3,4′ ,5,5′ -pentahydroxy-cis-stilbene	$C_{14}H_{12}O_3$	229.0865	227.0708	
180	Cudraflavone A	$C_{25}H_{22}O_6$	419.1495	417.1338	
181	Albafuran C	$C_{34}H_{28}O_9$	581.1812	579.1655	
182	Mulberrofuran G	$C_{34}H_{26}O_8$	563.1706	561.1549	
183	Uvaol	$C_{30}H_{50}O_2$	443.3889	441.3733	
184	Guangsangon A	$C_{41}H_{42}O_9$	679.2907	677.2751	
185	Kuwanon P	$C_{34}H_{30}O_9$	583.1968	581.1812	
186	Guangsangon B	$C_{34}H_{30}O_8$	567.2019	565.1862	

187	Kuwanon X	$C_{34}H_{30}O_9$	583.1968	581.1812	
188	Guangsangon C	$C_{35}H_{30}O_{10}$	611.1917	609.1761	
189	Guangsangon D	$C_{35}H_{30}O_{10}$	611.1917	609.1761	
190	Guangsangon E	$C_{39}H_{36}O_9$	649.2438	647.2281	
191	6,7-dimethylesculetin	$C_{11}H_{10}O_4$	207.0657	205.0501	
192	2′,4′-dihydroxy-7′- methoxy-8-prenylflavan	$C_{21}H_{24}O_4$	341.1753	339.1596	
193	4-hydroxybenzaldehyde	$C_7H_6O_2$	123.0446	121.0290	
194	(+)-demethoxypinoresinol	$C_{19}H_{20}O_5$	329.1389	327.1232	
195	(+)-pinoresinol	$C_{20}H_{22}O_6$	359.1495	357.1338	
196	Umbellic acid	$C_9H_8O_4$	181.0501	179.0344	
197	Linoleic acid	$C_{18}H_{32}O_2$	281.2481	279.2324	
198	Methyl linoleate	$C_{19}H_{34}O_2$	295.2637	293.2481	
199	(9S, 10E, 12E)-9-hydroxy-10,12-octadecadienoic acid	$C_{19}H_{34}O_3$	311.2586	309.2430	
200	N-(N-benzoyl-L-phenylalanyl-L-phenylalanol	$C_{25}H_{26}N_2O_3$	403.2022	401.1865	

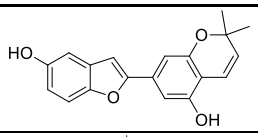
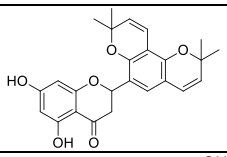
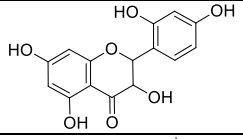
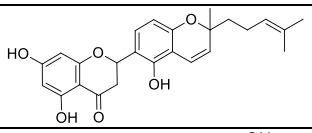
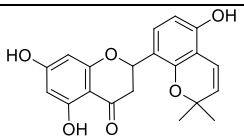
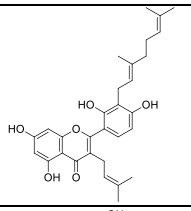
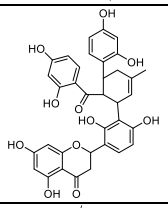
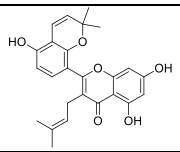
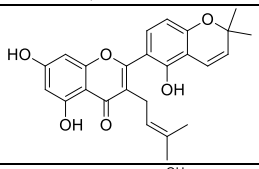
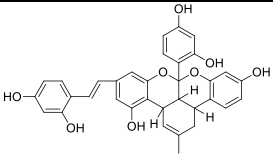
201	Isomoracin D	$C_{20}H_{18}O_4$	323.1283	321.1127	
202	Sanggenol O	$C_{25}H_{24}O_6$	421.1651	419.1495	
203	2,3-trans-dihydromorin	$C_{15}H_{12}O_7$	305.0661	303.0505	
204	Sanggenon J	$C_{25}H_{26}O_6$	423.1808	421.1651	
205	Sanggenon F	$C_{20}H_{18}O_6$	355.1182	353.1025	
206	3'-Geranyl-3-prenyl-2',4',5,7-tetrahydroxyflavone	$C_{30}H_{34}O_6$	491.2434	489.2277	
207	Kuwanon J	$C_{35}H_{30}O_{11}$	627.1861	625.1710	
208	Kuwanon A	$C_{25}H_{24}O_6$	421.1651	419.1495	
209	Kuwanon B	$C_{25}H_{24}O_6$	421.1651	419.1495	
210	Kuwanol A	$C_{34}H_{28}O_8$	565.1862	563.1706	

Table S2 The blood glucose level (mmol/L) of experimental mice.

Groups	0 Days	7 Days	14 Days	21 Days	28 Days
NC	5.37 ± 0.57	5.34 ± 0.93	5.56 ± 0.45	5.23 ± 0.50	5.28 ± 0.74
MC	32.38 ± 1.87**	32.19 ± 1.68**	32.56 ± 1.94**	33.12 ± 1.88**	33.23 ± 1.28**
Acarbose (AB)	33.08 ± 0.56	24.12 ± 0.79#	24.56 ± 0.43#	23.78 ± 0.78#	22.21 ± 0.73#
Morusin (MS)	31.45 ± 1.23	28.12 ± 0.95	27.45 ± 2.13	25.78 ± 1.95	23.45 ± 2.13#
RM	32.08 ± 1.27	27.26 ± 0.47	25.12 ± 0.97#	22.21 ± 2.03#	20.88 ± 1.82##
LM	31.17 ± 0.78	28.46 ± 0.12	28.67 ± 0.45	28.12 ± 0.67	27.33 ± 1.34
TM	33.32 ± 1.98	26.34 ± 1.21	26.45 ± 1.01	26.34 ± 1.45	24.74 ± 1.02#
FM	32.08 ± 1.07	29.12 ± 1.11	29.45 ± 1.78	30.21 ± 1.56	30.45 ± 1.89

** $p < 0.01$ compared with the normal control group on the same days. # $p < 0.05$, ## $p < 0.01$ compared with the data at the 0-days; NC: normal group; MC: model group; AB: acarbose group (positive control, 50 mg/kg); MS: morusin group (50 mg/kg); RM: roots of *M. alba* group (200 mg/kg); LM: leaves of *M. alba* group (200 mg/kg); TM: twigs of *M. alba* group (200 mg/kg); FM: fruits of *M. alba* group (200 mg/kg).

Table S3 The body weight (g) of experimental mice

Group	Weight（g）				
	0 Days	7 Days	14 Days	21 Days	28 Days
NC	36.17 ± 1.21	38.25 ± 1.53	40.34 ± 1.23	45.32 ± 2.46#	55.23 ± 1.26##
MC	40.34± 4.21	43.25 ± 4.32	40.23 ± 3.22	36.11 ± 3.34**	32.22 ± 2.44**
Acarbose (AB)	40.29 ± 1.11	40.12 ± 1.34	41.23 ± 1.67	42.34 ± 1.65	42.64 ± 1.43
Morusin (MS)	38.25 ± 2.67	38.23 ± 3.23	38.34 ± 4.01	38.67 ± 3.45	39.44 ± 3.67
RM	35.23 ± 1.44	36.23 ± 1.45	37.34 ± 1.07	39.23 ± 1.47	45.12 ± 1.45#
LM	36.21± 3.45	37.34 ± 3.27	37.89 ± 3.07	38.23 ± 2.88	38.56 ± 3.53
TM	35.34 ± 3.09	36.32 ± 3.27	37.23 ± 3.07	38.12 ± 2.88	39.44 ± 3.53
FM	36.70 ± 1.07	36.34 ± 1.27	36.67 ± 1.07	35.12 ± 1.88	34.01 ± 1.53

** $p < 0.01$ compared with the normal control group on the same days. # $p < 0.05$, ## $p < 0.01$ compared with the data at the 0-days; NC: normal group; MC: model group; AB: acarbose group (positive control, 50 mg/kg); MS: morusin group (50 mg/kg); RM: roots of *M. alba* group (200 mg/kg); LM: leaves of *M. alba* group (200 mg/kg); TM: twigs of *M. alba* group (200 mg/kg); FM: fruits of *M. alba* group (200 mg/kg).

Table S4 The postprandial glycemia (mmol/L) of the normal mice.

Time (min)	blood glucose (mmol/L)			
	NC	**Acarbose (AB)**	**RM**	**TM**
0	4.28 ± 0.89	4.21 ± 1.21	4.07 ± 0.23	4.45 ± 0.28
30	13.21 ± 1.11	10.34 ± 0.23*	9.01 ± 0.47*	10.25 ± 1.11*
60	10.89 ± 1.23	9.45 ± 0.89	8.00 ± 0.35	9.12 ± 0.78
90	8.21 ± 0.67	8.45 ± 0.76	7.67 ± 0.67	8.12 ± 0.35
120	6.34 ± 0.54	6.78 ± 0.93	6.21 ± 0.34	6.33 ± 0.65

* $p < 0.05$ compared with the normal control group (NC). NC: normal group; AB: acarbose group (positive control, 50 mg/kg); RM: roots of *M. alba* group (200 mg/kg); TM: twigs of *M. alba* group (200 mg/kg).

Table S5 Trial groups, number of mice and dose design of anti-diabetic experiment.

Group	Number of Mice	Dose （mg/kg）
Normal control (NC)	10	--
Model control (MC)	10	--
Positive control (Acarbose)	10	50
Morusin	10	50
RM	10	200
LM	10	200
TM	10	200
FM	10	200