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# PAPER



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### 1. Introduction

Traditional Chinese medicines (TCMs) play an important role in Chinese medicine due to their wide application and efficacy, particularly in the management of chronic diseases.<sup>1</sup> TCMs are composed of complex chemical constituents for multi-target treatment, and produce synergistic effects and reduce side effects. Although there has been a lot of research on TCMs, the active ingredients of most traditional Chinese medicine prescriptions remain unknown. Therefore, developing a fast and efficient analysis method to separate and identify complex constituents in TCMs is necessary for illustrating the pharmacological material basis of TCMs.

Sanhua decoction (SHD), a famous Chinese herbal formula, is recorded in the classic traditional Chinese medicine (TCM) book Suwen Bingji Qiyi Baomingji (Plain Questions: Discourse on Mechanism for Preserving Life). It consists of four crude herbs: Zhishi (*Aurantii fructus immaturus*), Dahuang (*Rheum palmatum* L.), Houpu (*Magnoliae Officmalis Cortex*) and Qianghuo (*Notopterygii Rhizoma Et Radix*). SHD is used widely for the

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# Rapid characterization of the chemical constituents of Sanhua decoction by UHPLC coupled with Fourier transform ion cyclotron resonance mass spectrometry<sup>+</sup>

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Sanhua decoction, a famous Chinese herbal formula has been widely used for the treatment of stroke. In our study, a rapid, swift and straightforward analytical method with the help of UHPLC-FT-ICR-MS/MS was successfully developed for the first time to separate and identify the chemical constituents of Sanhua decoction. Chromatography was performed on a Universal XB C<sub>18</sub> column (150 mm  $\times$  2.1 mm, 1.8 µm) using a mobile phase containing 0.1% formic acid–water (A) and acetonitrile (B). A total of 137 compounds in Sanhua decoction were identified or tentatively characterized. The findings revealed the fact that Sanhua decoction mainly contains flavonoids (in *Aurantii fructus immaturus* and *Rheum palmatum* L.), anthraquinones (in *Rheum palmatum* L.), coumarins (in *Notopterygii Rhizoma Et Radix*), phenylpropanoid glycosides, alkaloids and lignans (in *Magnoliae Officmalis Cortex*), which made up the key ingredients existing in Sanhua decoction. This study is hoped to be meaningful for the characterization of components in other traditional Chinese medicines, and lay the foundation for research on the pharmacology of Sanhua decoction.

treatment of stroke. It can improve ischemic cerebral edema and brain blood barrier (BBB) permeability.<sup>2</sup> It has been documented that Zhishi has neuroprotective, antioxidant, anti inflammatory and anti-apoptotic effects.<sup>3</sup> Dahuang can protect neurons from hypoxic-ischemic brain damage.<sup>4</sup> Houpu can protect neural damage from cerebral ischemia and reperfusion by suppressing cerebral inflammation and improving BBB function.<sup>5</sup> Qianghuo has a function of anti-thrombosis, increasing cerebral blood flow and improving cerebral blood circulation.<sup>6</sup> However, the chemical material basis of SHD has not been studied in detail until now.

As the complexity of traditional Chinese medicine, it is very important to establish a sensitive and reliable detection method. Chromatography-mass spectrometry (LC-MS) is widely used for its high sensitivity and specificity. Ultra high performance liquid chromatography (UHPLC) coupled with Fourier transform ion cyclotron resonance mass spectrometry (FT-ICR-MS) as the most powerful instrument with high resolution, accuracy and sensitivity play a role in analyzing different kinds of complex samples.<sup>7-10</sup> It provides an unambiguous elemental composition and information about the isotopic abundance of ions to help determine the compositions and structures of chemical constituents. By usage of this technology, Li *et al.* characterized 179 constituents in *Rhodiola crenulata* as well as 37 prototypes and 142 metabolites in rats.<sup>11</sup> Guan *et al.* characterized 120 constituents in Sijunzi decoction<sup>12</sup> and Liu *et al.* 

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characterized 174 constituents in Gegenqinlian decoction as well as 107 prototypes and 67 metabolites in rats.<sup>13</sup> The results show that this method is useful in detecting and indenting chemical constituents and metabolites by information about accurate molecular weight and MS<sup>2</sup>.

In this study, a rapid and simple approach by UHPLC-FT-ICR-MS was established for the systematical characterization of the constituents of SHD. This constituent characterization and structural elucidation provided significant information for a pharmacological study of SHD.

### 2. Material and methods

#### 2.1 Chemicals and materials

The purchase of key ingredients including, Aurantii fructus immaturus (batch number: 170 901; source: Sichuan China), Rheum palmatum L. (batch number: 20 181 101; source: Gansu China), Magnoliae Officmalis Cortex (batch number: 181 001; source: Sichuan China) and Notopterygii Rhizoma Et Radix (batch number: 13 112 501; source: Sichuan China) was made from Guoda pharmacy (Shenyang, China), which followed identification by Professor Jingming Jia (Department of TCM, Shenyang Pharmaceutical University, Shenyang, China). The key source of the reference compounds (purity > 98%), including sennoside B, nodakenin, narirutin, sennoside A, neohesperidin, naringenin, hesperetin, nobiletin was Shanghai Yuanye Bio-Technology Co., Ltd. (Shanghai, China); naringin, hesperidin and honokiol was attained from the National Institute for the Control of Pharmaceutical and Biological Products (Beijing, China). In addition, acetonitrile of HPLC grade, together with formic acid of LC-MS grade was attained from Fisher Scientific (Fair Lawn, NJ, USA), followed by attaining the purified water from Wahaha (Hangzhou, China).

#### 2.2 Preparation of SHD for analysis

Following the documentary records of SHD, four constituting herbs that included *Aurantii fructus immaturus* (40 g), *Rheum palmatum* L. (40 g), *Magnoliae Officmalis Cortex* (40 g) and *Notopterygii Rhizoma Et Radix* (40 g) were soaked in water for 60 min, then decocted two times in 80 mL water for a period of 1 h each time in a glass flask and the ensuing solution was mixed and dried with the help of lyophilization. Prior to the analysis, dissolution the 0.5 g of dried powder was dissoluted by 5 mL methanol-aqueous (1 : 1) solution, soaking for 15 min with 80 °C water.

#### 2.3 Instrument and analytical conditions

The sample was analyzed by the UHPLC-DAD-FT-ICR-MS system contains an Agilent 1260 UHPLC system combined with a Bruker Solarix7.0T FT-ICR-MS system (Germany) and Bruker Compass-Hystar workstation (Bruker, Germany). Chromatography was carried out on a Universal XB  $C_{18}$  column (150 mm  $\times$  2.1 mm, 1.8 µm; Kromat, USA) at the temperature of 35 °C. The mobile phase contained 0.1% formic acid–water (A) and acetonitrile (B). The gradient conditions were as follows: 8–12% (B) in 0 to 10 min, 12–13% (B) in 10 to 12 min, 13–18% (B) in 13

The mass spectra were performed with positive as well as negative electrospray ionization (ESI) modes, followed by setting the optimized conditions are as follows: capillary voltage, 4.5 kV; plate offset, 500 v; nebulizer gas pressure, 4.0 bar; dry gas flow rate, 8 L min<sup>-1</sup>; dry gas temperature, 200 °C; ion accumulation time, 0.15 s, and flight time, 0.6 ms. Full scan mass spectrometry data were recorded between m/z 100 and 1200 amu and the collision energy was ranged from 10 eV to 30 eV for MS/MS experiments.

### 3. Results and discussion

The Fig. 1 reveals the base peak ion chromatograms (BPC) of SHD in positive as well as negative ion modes, together with the respective compounds. The extract ion chromatograms (EIC) of each molecule weight were correspondingly attained for detecting the associated compound followed by presenting in support information Fig. S1.† Comparing with reference compounds, eleven peaks from SHD were accurately identified by the retention times and MS fragments in positive ion mode. The peak of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 in Fig. 1C were sennoside B, nodakenin, narirutin, naringin, sennoside A, hesperidin, neohesperidin, naringenin, hesperetin, honokiol, nobiletin, respectively. The others were predicted by Bruker workstation, whether or not the mass error values between the identified molecular weights with the measured molecular weights were below 3.0 ppm. If yes, it can infer the chemical structure of each component by the retention time and MS/MS data with published literature.14-28 In the end, a total of 137 compounds were identified and characterized, whereas their layouts were presented in support information Fig. S2.†

The MS/MS spectra of representative compounds are shown in Fig. 2, and displaying deduced fragmentation pathways are shown in Fig. 3. Except that, the formula, retention time, MS data, calculated m/z, error, ion mode and MS/MS data of other detected components were listed in Table 1.

#### 3.1 Characterization of flavonoids in SHD

Flavonoids have a typical cyclohexene structure in the C ring, which is unstable and easy to break it for Diels–Alder reaction (RDA), and get the characteristic fragment ions 1,3A and 1,3B. Flavonoid glycosides have methoxy group, firstly losing the glycosyl groups, followed by losing the methyl groups, at last cleavage of the C ring. The mass spectral fragmentation of flavonoids by hesperidin as an example was described. In positive ion mode, adduct ion at m/z 611.19650 ([M + H]<sup>+</sup>) indicating an elemental composition of C<sub>28</sub>H<sub>34</sub>O<sub>15</sub>. The MS/MS spectrum (Fig. 3A) is presented that the main fragment ions are m/z 449.14312, 303.08581, 288.09732, 153.02175 as well as 136.04821. Among them, m/z 449.14312 and 303.08581 are inferred by cleaving of the glycosidic linkage and losing C<sub>6</sub>H<sub>10</sub>O<sub>5</sub> (162 Da) or C<sub>12</sub>H<sub>20</sub>O<sub>9</sub> (308 Da) from the ion of [M - H]<sup>+</sup>,

#### Paper



Fig. 1 The base peak ion chromatograms (BPC) of SHT in both positive (A) and negative (B) ion modes and the corresponding compounds (C). (1) Sennoside B, (2) nodakenin, (3) narirutin, (4) naringin, (5) sennoside A, (6) hesperidin, (7) neohesperidin, (8) naringenin, (9) hesperetin, (10) honokiol, (11) nobiletin.



Fig. 2 The MS/MS spectra of the typical compounds. (A) Hesperidin, (B) nomilin, (C) emodin-O-malonyl-glucose, (D) galloyl-glucoside, (E) epicatechin, (F) honokiol, (G) magnolol, (H) acteoside, (I) magnocurarine, (J) bergaptol.



Fig. 3 The possible fragmentation pathways of the typical compounds. (A) Hesperidin, (B) nomilin, (C) emodin-O-malonyl-glucose, (D) galloyl-glucoside, (E) epicatechin, (F) honokiol, (G) magnolol, (H) acteoside, (I) magnocurarine, (J) bergaptol.

m/z 288.09732 is the result of losing CH<sub>3</sub> (15 Da) from m/z 303.08581, and m/z 153.02175 and m/z 136.04821 was due to the Diels–Alder reaction from m/z 288.09732. The characterization of other flavonoids in SHD was performed based on the fragmentation patterns and related literatures.<sup>14-18</sup>

#### 3.2 Characterization of triterpenoids in SHD

Triterpenoids are prone to lose H<sub>2</sub>O (18 Da), CO (28 Da) and CO<sub>2</sub> (44 Da), due to the presence of lactone rings. Nomilin was selected to illustrate the fragmentation pathways. In positive ion mode, adduct ion at m/z 515.22753 ( $[M + H]^+$ ) indicating an elemental composition of C<sub>28</sub>H<sub>34</sub>O<sub>9</sub>. The MS/MS spectrum (Fig. 3B) is presented that the main fragment ions are m/z 469.21806, 455.20675, 411.21462, 161.05854. Among them, m/z 469.21806 is inferred by losing CO and H<sub>2</sub>O (46 Da) from [M + H]<sup>+</sup>, m/z 455.20675 is presumed by losing C<sub>2</sub>H<sub>4</sub>O<sub>2</sub> (60 Da) from [M + H]<sup>+</sup>, m/z 455.20675, and m/z 161.05854 is estimated by losing C<sub>18</sub>H<sub>26</sub>O<sub>7</sub> (354 Da) from [M + H]<sup>+</sup>. The characterization of other

triterpenoids in SHD was performed based on the fragmentation patterns and related literatures.<sup>15,19</sup>

#### 3.3 Characterization of anthraquinones in SHD

The common characteristic of  $MS^2$  in anthraquinones is the continuous loss of CO (28 Da). Anthraquinone glycosides can lose glycosyl and CO, continually. Aglycones can be judged by [aglycone – H]<sup>-</sup>. Anthraquinone glycosides can lose methyl-glucuronide (190 Da), cinnamoyl (148 Da), malonyl (86 Da), acetyl-glucose (204 Da), and glucose (162 Da). Emodin-*O*-malonylglucose was selected to illustrate the fragmentation pathways. In negative ion mode, adduct ion at m/z 517.09935 ([M – H]<sup>-</sup>) indicating an elemental composition of C<sub>24</sub>H<sub>22</sub>O<sub>13</sub>. The mass spectrum (Fig. 3C) shows that the main fragment ions are m/z 473.10884, 431.09157, 269.04531 and 241.05131. Among them, m/z 473.10884 is presumed by losing of CO<sub>2</sub> (44 Da) from [M – H]<sup>-</sup>, m/z 431.09157 is inferred by losing of the C<sub>3</sub>H<sub>2</sub>O<sub>3</sub> (86 Da) from [M – H]<sup>-</sup>, and m/z 269.04531 is speculated by

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	Main	source
on-NonCommercial 3.0 Unported Licence.		MS/MS $(m/z)$

Mair sour	R C	R	Я	В	М	z	Я	М	В	z	Μ	,	Z	М	2	4 2	2	4 0	: כ	2 2	M	Σ	C	N N		U	К	Я	;	Z	υ	z	۵	; z			C	В
(z/m) SM/SM	147.04051, 129.05446 313.05289, 271.04772, 211.02436,	169.01338, 125.00325 373.07705, 331.06771, 313.05667, 271 0.4642	151.00284, 125.02324	289.07014, 245.08287	299.11268, 137.05927	191.09726, 179.76826, 173.10064	289.07156, 245.08176, 203.07109	269.11618, 237.08974, 175.07514, 107.04887	245.08146, 205.04962, 203.06974	191.10029, 179.14054, 173.10065	372.08647, 343.94804, 208.09042,	13/.0393/	297.10956, 282.08696, 265.08507, 237.08972	269.11625, 237.09024, 175.07485, 107.04861	107:04001 045 08235 003 07153	649.28262. 623.38565. 477.34832	431.09851. 269.04559. 239.03448	ETT 15626 EDE 12400 ATE 12405	3//.13030, 303.13492, 4/3.12403 211 19696 906 1006 300 10061	311.12628, 296.10825, 280.10864 251 10517 235 00171 210 00075	231.1004/, 230.064/4, 219.080/0, 191.08617	649 28357 623 38647 477 34187	607.16748. 535.14662. 505.13284	461.10814, 331.06702, 313.05827,	211.02305	178.02482, 165.05373, 122.03784	237.07692, 201.01967, 146.96590	269.04543, 241.05106, 225.05490,	213.05525	263.08937, 245.08472	173.07564, 145.04536, 117.05273	185.02456, 157.17256, 129.10451, 101.06230	248 05020 248 05078 161 04574 146 06410	201.03287. 159.17264. 131.10514	419,13174, 273,07487, 153,01846	581.18682. 435.12794. 273.07526	435.12791. 289.06947. 153.01849	
mqq	$\begin{array}{c} 2.21 \\ -1.57 \end{array}$	-0.93	-1.30	-1.31	-0.64	-1.23	-1.01	1.07	-1.22	-1.25	0.80		0.91	1.02	-1.26	2.11	-0.38	1 22	62.1 101	10.1	66.0	1.76	0.84	-1.15		0.95	-1.39	-0.65		0.91	0.45	-1.17	1 17	0.81	0.85	0.75	0.73	-0.83
Ion mode	$\left[ {{\rm M} + {\rm H}}  ight]^+$	$[M - M]^{-}$	$[M - H]^{-}$	$[M - H]^{-}$	$[M - H]^{-}$	$[M - H]^{-}$	$[M - H]^-$	$[M + H]^+$	$[M - H]^-$	$[M - H]^{-}$	$[M + Na]^+$		[H + M]	$[M + H]^+$	[M – H] <sup>–</sup>	[M - M]	[M – M]		[m + m]	[M + H]	$[\mathbf{H} + \mathbf{M}]$	[M – H] <sup>–</sup>	[H + M]	[M - M]	ר ג	$[M + H]^+$	$[M - H]^{-}$	$[M - H]^{-}$	+	[M + Na]	[H + M]	$[M - H]^-$	[M _ H] <sup>_</sup>	[H + M]	[H + H]	[H + M]	[M + H] <sup>+</sup>	[H - M]
Detected mass ( <i>m</i> / <i>z</i> )	193.07024 331.06759	493.12035	169.01447	451.12518	461.16674	353.08824	451.12504	314.17473	289.07211	353.08825	395.13094		342.16967	314.17475	289.07213	785.24931	593.15142		20201.0202	350.18528	200.13294	785 24959	625.17579	623.16247		193.04935	309.09841	459.09358		447.12576	203.03379	201.01957	300 008/13	365.08641	581.18599	743.23875	597.18096	389.12479
Monoisotopic mass ( <i>m</i> / <i>z</i> )	193.07066 331.06707	493.11989	169.01425	451.12459	461.16645	353.08781	451.12459	314.17507	289.07176	353.08781	395.13125		342.16998	314.17507	289 07176	785.25097	593.15119		090.100/0	356.18563	708.13321	785.25097	625.17631	623.16176		193.04954	309.09798	459.09329		447.12617	203.03389	201.01933	309.00708	365.08671	581.18648	743.23931	597.18140	389.12419
Formula	$C_7 H_{12} O_6 \\ C_{13} H_{16} O_{10}$	$C_{19}H_{26}O_{15}$	$C_7 H_6 O_5$	$C_{21}H_{24}O_{11}$	$C_{20}H_{30}O_{12}$	$C_{16}H_{18}O_9$	$C_{21}H_{24}O_{11}$	$\mathrm{C_{19}H_{24}NO_3^+}$	$C_{15}H_{14}O_6$	$C_{16}H_{18}O_9$	$\mathrm{C}_{17}\mathrm{H}_{24}\mathrm{O}_9$	+	$C_{20}H_{24}NO_4$	$\mathrm{C_{19}H_{24}NO_3}^+$	CH.O.	C15H1406	C3311460 20	C2/1130-15	$C_{27}\Pi_{30}O_{15}$	$C_{21}H_{25}O_4N$	U17H17U2N	CHO	C331146020 CasH3016	C <sub>28</sub> H <sub>32</sub> O <sub>16</sub>		$\mathrm{C}_{10}\mathrm{H}_{8}\mathrm{O}_{4}$	$\mathrm{C_{15}H_{18}O_7}$	$C_{22}H_{20}O_{11}$	:	$C_{20}H_{20}O_{10}$	$\mathrm{C}_{11}\mathrm{H_6O_4}$	$C_{11}H_6O_4$	CHO-	C151180/ C1-H1600	Cl.H.O.	C2/H32O14 C33H2040	C37-120 15	$C_{20}H_{22}O_8$
Identification	Quinic acid Galloyl-glucoside	1-Galloyl-di-glucoside	Gallic acid	Catechin-3-0-glucoside	Rebouoside C	Chlorogenic acid	Catechin-5-0-glucoside	Magnocurarine	Catechin	Cryptochlorogenic acid	Syringin	-	Magnotlorine	(R)-Oblongine	Enicatechin	Tennolioside	Aloe-emodin-0-di-olucoside	Animonia 6.0 di Paluonido	Apigenniro, o'ai-t-'giucosiue Vaathoalaaiao	xantnoplanine	ASIIIUUUUU	Echingcoside	Chvsoeriol-6.8-di-C-vlucoside	1-Cinnamovl-6-O-(glucosyl)-	galloyl-glucoside	Scopoletin	2-0-Cinnamyl-β-ɒ-glucoside	Emodin-O-glucuronic acid methyl	ester	Decuroside V	Xanthotoxol	Bergaptol	1-0-Cinnamul-ß-n-aluaocide	Beroantol-O-8-n-oluconvranoside	Natsudaidain-3-0-ohnoside	Narirutin-4'-0-ølucoside	Eriocitrin	Resveratrol-4'-0-glucoside
$t_{ m R}~({ m min})$	2.07 2.64	2.91	3.21	4.85	5.59	6.04	7.02	7.79	10.40	10.63	10.64		13.55	16.29	16.62	18.49	19.22	10.01	10.00	20.32	20.74	21.26	21.76	21.95		22.31	22.45	22.55		23.60	23.73	23.73	<b>73 76</b>	23.77	2.4.94	24.97	25.16	25.35
No.	7 7	3	4	5	9	7	8	6	10	11	12		13	14	ר ע	16	17	, F	0 7	PI P	70	2.1	22	23		24	25	26	!	27	28	29	30	31	32	33	34	35

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| 77.14067 $[M - H]^ -0.90$ 313.05691, 211.         77.14071 $[M - H]^ -1.12$ 313.05659, 211.         77.14071 $[M - H]^ -1.12$ 313.05559, 211.         71.20060 $[M + H]^+$ $0.83$ 425.19343, 339.         45.07816 $[M - H]^ -1.21$ 285.07559, 267.         55.16515 $[M + H]^+$ $0.83$ 425.19343, 390.         55.16515 $[M + H]^+$ $0.56$ 272.07462, 227.         55.12833 $[M + H]^+$ $0.56$ 272.07462, 227.         59.07051 $[M + H]^+$ $0.56$ 272.01692, 135.         99.07051 $[M + H]^+$ $0.53$ 155.01692, 135.         97.18134 $[M + H]^+$ $0.53$ 155.01692, 135.         97.18134 $[M + H]^+$ $0.52$ $437.19725, 425.         97.18134       [M + H]^+ 0.52 437.19725, 425.   $   | 14067 $[M - H]^ -0.90$ 313.05691, 211.         14071 $[M - H]^ -0.90$ 313.05691, 211.         14071 $[M - H]^ -1.12$ 313.05659, 211.         20060 $[M + H]^+$ $0.83$ 425.19343, 339.         07816 $[M - H]^+$ $0.83$ 425.19343, 339.         07816 $[M + H]^+$ $0.83$ 425.19343, 339.         15515 $[M + H]^+$ $0.83$ 425.19343, 390.         15333 $[M + H]^+$ $0.66$ 272.07462, 227.         15833 $[M + H]^+$ $0.56$ 272.07462, 237.         15833 $[M + H]^+$ $0.53$ 155.01692, 135.         153148 $[M - H]^ 0.53$ 153.01692, 135.         25108 $[M - H]^ 0.52$ $437.19754, 227.         23656       [M - H]^ -1.61 635.18786, 609.   $  | $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$  | $ \begin{bmatrix} M - H \end{bmatrix}^{-} -0.90 & 135.04384 \\ [M - H ]^{-} -0.90 & 13.05691, 211. \\ [25.02387 ] 125.02387 \\ [M + H ]^{+} & 0.83 & 125.02321 \\ [M - H ]^{+} & 0.83 & 425.19343, 339. \\ [M + H ]^{+} & 0.83 & 425.19343, 339. \\ [M + H ]^{+} & 1.00 & 419.13403, 390. \\ [M + H ]^{+} & 0.56 & 272.07462, 227. \\ [M + H ]^{+} & 0.56 & 272.07462, 227. \\ [M + H ]^{+} & 0.56 & 272.07462, 227. \\ [M + H ]^{+} & 0.53 & 153.01692, 135. \\ [M - H ]^{+} & 0.53 & 153.01692, 135. \\ [M - H ]^{+} & 0.38 & 153.0178, 133. \\ [M - H ]^{-} & -1.50 & 475.10891, 331. \\ [M - H ]^{-} & -1.50 & 475.10891, 331. \\ \end{bmatrix} $   
   | $ \begin{bmatrix} M - H \end{bmatrix}^- & -0.90 & 135.04384 \\ [M - H ]^- & -0.90 & 313.05691, 211. \\ [M + H ]^+ & 0.83 & 125.02321 \\ [M + H ]^+ & 0.83 & 425.19343, 339. \\ [M + H ]^+ & 0.83 & 425.19343, 339. \\ [M + H ]^+ & 0.56 & 272.07462, 227. \\ [M + H ]^+ & 0.56 & 272.07462, 237. \\ [M + H ]^+ & 0.53 & 153.01692, 135. \\ [M + H ]^+ & 0.53 & 153.01692, 135. \\ [M + H ]^+ & 0.53 & 153.01692, 135. \\ [M + H ]^+ & 0.53 & 153.01718, 133. \\ [M - H ]^- & -1.50 & 475.10891, 331. \\ [M - H ]^- & -1.48 & 247.04625, 229. \\ [M + H ]^+ & -0.28 & 153.01718, 133. \\ [M - H ]^- & -1.48 & 247.04625, 229. \\ [M + H ]^+ & -0.28 & 153.01718, 133. \\ [M - H ]^- & -1.50 & 475.10891, 331. \\ [M - H ]^- & -1.39 & 487.10765, 229. \\ [M + H ]^+ & -0.28 & 153.01718, 133. \\ [M - H ]^- & -1.50 & 475.04625, 229. \\ [M + H ]^+ & -0.28 & 153.01718 \\ [M - H ]^- & -1.50 & 475.04625, 229. \\ \end{tabular}$   | $ \begin{bmatrix} M - H \end{bmatrix}^- & -0.90 & 313.05691, 211. \\ M - H \end{bmatrix}^- & -0.90 & 313.05691, 211. \\ 125.02387 & 125.02387 \\ M + H \end{bmatrix}^+ & 0.83 & 425.19343, 339. \\ M + H \end{bmatrix}^+ & 0.83 & 425.19343, 339. \\ M + H \end{bmatrix}^+ & 0.56 & 241.07041, 390. \\ M + H \end{bmatrix}^+ & 0.56 & 272.07462, 227. \\ M + H \end{bmatrix}^+ & 0.53 & 153.01692, 135. \\ M + H \end{bmatrix}^+ & 0.53 & 153.01692, 135. \\ M + H \end{bmatrix}^+ & 0.53 & 153.01692, 135. \\ M + H \end{bmatrix}^+ & 0.53 & 153.01692, 135. \\ M + H \end{bmatrix}^+ & 0.53 & 153.01692, 135. \\ M - H \end{bmatrix}^- & -1.61 & 635.13786, 699. \\ M + H \end{bmatrix}^+ & 0.38 & 153.01718, 133. \\ M - H \end{bmatrix}^- & -1.61 & 635.13786, 699. \\ M + H \end{bmatrix}^+ & 0.28 & 153.01718, 133. \\ M - H \end{bmatrix}^- & -1.61 & 635.13786, 699. \\ M + H \end{bmatrix}^+ & 0.28 & 153.01718, 133. \\ M - H \end{bmatrix}^- & -1.61 & 635.13786, 699. \\ M + H \end{bmatrix}^+ & 0.28 & 153.01714 & 133. \\ M - H \end{bmatrix}^- & -0.28 & 153.01714 & 133. \\ M + H \end{bmatrix}^+ & 0.28 & 153.01714 & 133. \\ M + H \end{bmatrix}^+ & 0.28 & 153.01714 & 133. \\ M + H \end{bmatrix}^+ & 0.28 & 153.01714 & 133. \\ M + H \end{bmatrix}^+ & 0.28 & 153.01714 & 133. \\ M + H \end{bmatrix}^+ & 0.28 & 153.01714 & 133. \\ M + H \end{bmatrix}^+ & 0.28 & 153.01714 & 133. \\ \end{bmatrix}$  | $ \begin{bmatrix} M - H \end{bmatrix}^- & -0.90 & 135.04384 \\ [M - H ]^- & -0.90 & 313.05691, 211. \\ 125.02387 & 211. \\ 125.02381 & 13.05659, 211. \\ [M + H ]^+ & 0.83 & 425.019343, 339. \\ [M + H ]^+ & 0.83 & 425.07559, 267. \\ [M + H ]^+ & 0.56 & 241.07041 & 241.07041 & 241.07041 & 241.07041 & 241.07041 & 241.07041 & 241.07041 & 241.07041 & 241.07041 & 241.07041 & 241.07041 & 241.07041 & 241.07041 & 242.0492, 227. \\ [M + H ]^+ & 0.53 & 153.01692, 135. \\ [M + H ]^+ & 0.53 & 153.01692, 135. \\ [M + H ]^+ & 0.53 & 153.01692, 135. & 425.19786, 699. \\ [M + H ]^+ & 0.53 & 153.01692, 135. & 425.19786, 699. \\ [M + H ]^+ & 0.53 & 153.01718, 133. \\ [M - H ]^- & -1.61 & 635.18786, 699. & 331. \\ [M - H ]^- & -1.50 & 475.10891, 331. \\ [M - H ]^+ & 0.28 & 153.01714 & 331. \\ [M + H ]^+ & 0.28 & 153.01714 & 577.15147, 457. \\ [M + H ]^+ & 0.84 & 577.15147, 457. \\ [M - H ]^- & -1.71 & 699.13514, 655.
\end{bmatrix}$   | $ \begin{bmatrix} M - H \end{bmatrix}^- & -0.90 & 135.04384 \\ [M - H ]^- & -0.90 & 313.05691, 211. \\ [M + H ]^+ & 0.83 & 125.02331 \\ [M + H ]^+ & 0.83 & 425.19343, 339. \\ [M + H ]^+ & 0.83 & 425.19343, 339. \\ [M + H ]^+ & 0.56 & 125.07559, 267. \\ [M + H ]^+ & 0.56 & 127.07462, 227. \\ [M + H ]^+ & 0.56 & 155.10692, 135. \\ [M + H ]^+ & 0.56 & 155.10748, 289. \\ [M + H ]^+ & 0.53 & 153.01692, 135. \\ [M + H ]^+ & 0.53 & 153.01718, 133. \\ [M - H ]^- & -1.39 & 487.19725, 425. \\ [M + H ]^+ & 0.52 & 435.12786, 699. \\ [M + H ]^+ & 0.38 & 153.01718, 133. \\ [M - H ]^- & -1.61 & 635.18786, 609. \\ [M - H ]^- & -1.50 & 475.10891, 331. \\ [M - H ]^- & -1.21 & 269.04549, 240. \\ [M - H ]^- & -1.24 & 269.04549, 240. \\ [M - H ]^- & -1.24 & 269.04549, 240. \\ [M - H ]^- & -1.24 & 269.04549, 240. \\ [M - H ]^- & -1.24 & 269.04549, 240. \\ \end{bmatrix}$   | $ \begin{array}{cccccccccccccccccccccccccccccccccccc$  | $ \begin{array}{cccccccccccccccccccccccccccccccccccc$   
  | $ \begin{array}{cccccccccccccccccccccccccccccccccccc$   | $\begin{bmatrix} 135.04384 \\ 135.04385 \\ -0.90 \\ 313.05691, 211. \\ 125.02387 \\ 2125.02387 \\ 313.05659, 211. \\ 125.02321 \\ 325.07559, 267. \\ 225.07559, 267. \\ 225.07569, 239. \\ 221.07041 \\ 221.07041 \\ 321.010 \\ 419.13403 \\ 330. \\ 153.01592, 135. \\ 153.01592, 135. \\ 153.01592, 135. \\ 153.01592, 135. \\ 153.01592, 135. \\ 153.01718, 133. \\ 153.01718, 133. \\ 153.01714 \\ 10.28 \\ 153.01714 \\ 10.28 \\ 153.01714 \\ 10.28 \\ 153.01714 \\ 10.28 \\ 153.01714 \\ 10.28 \\ 153.01714 \\ 10.29 \\ 153.01714 \\ 10.24 \\ 269.04549, 240. \\ 165.12779, 419. \\ 10.36 \\ 10.36 \\ 10.36 \\ 10.31 \\ $   
   
   | $ \begin{bmatrix} 1.35.04589\\ -0.90 & 313.05691, 211. \\ 125.02387 & 12.5.02387 \\ 125.02387 & 339. \\ 125.02321 & 339. \\ 125.02321 & 339. \\ 285.07559, 267. \\ 285.07559, 267. \\ 285.07559, 267. \\ 285.07559, 267. \\ 285.07559, 267. \\ 285.07559, 267. \\ 285.07519, 289. \\ 285.07519, 289. \\ 285.07519, 289. \\ 285.07519, 289. \\ 285.07519, 289. \\ 285.094549, 240. \\ -1.24 & 249.14346, 303. \\ -1.24 & 249.14346, 303. \\ -1.24 & 269.04549, 240. \\ -1.24 & 269.04$  | $\begin{array}{cccccccccccccccccccccccccccccccccccc$   | $\begin{array}{cccccccccccccccccccccccccccccccccccc$  
   | $\begin{array}{cccccccccccccccccccccccccccccccccccc$   | $ \begin{bmatrix} -0.90 & 135.04384 \\ 135.04387 & 211. \\ -1.12 & 125.02387 & 211. \\ 125.02381 & 339. \\ 285.07559 & 267. \\ -1.21 & 285.07559 & 267. \\ -1.21 & 285.07559 & 267. \\ -1.21 & 285.07559 & 267. \\ -1.21 & 285.07559 & 267. \\ -1.21 & 285.07559 & 267. \\ -1.21 & 285.07559 & 267. \\ -1.21 & 285.07559 & 267. \\ -1.21 & 285.07559 & 267. \\ -1.39 & 487.19725 & 425. \\ -1.39 & 487.19725 & 425. \\ -1.39 & 487.19725 & 425. \\ -1.39 & 487.19725 & 425. \\ -1.39 & 487.19725 & 229. \\ -1.39 & 487.19725 & 229. \\ -1.39 & 487.19725 & 229. \\ -1.39 & 487.19725 & 249. \\ -1.39 & 0.52 & 435.12799 & 133. \\ -1.24 & 0.52 & 435.12779 & 419. \\ -1.24 & 0.84 & 577.15147 & 457. \\ -1.24 & 0.47 & 449.14346 & 303. \\ -0.47 & 449.14346 & 303. \\ -0.47 & 449.14346 & 303. \\ -0.68 & 273.07329 & 153. \\ -0.59 & 701.13594 & 657. \\ -0.380 & 270.03807 & 657. \\ \end{bmatrix} $  | $\begin{array}{cccccccccccccccccccccccccccccccccccc$  | $\begin{array}{cccccccccccccccccccccccccccccccccccc$  
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77.14067 $[M - H]^ -0.9$ 77.14071 $[M - H]^ -1.1$ 77.120060 $[M + H]^+$ $0.83$ 71.20061 $[M + H]^+$ $0.83$ 45.07816 $[M + H]^+$ $0.83$ 55.16515 $[M + H]^+$ $0.53$ 55.12833 $[M + H]^+$ $0.53$ 90.7051 $[M + H]^+$ $0.53$ 91.25108 $[M + H]^+$ $0.53$ 97.18134 $[M + H]^+$ $0.53$	$  \begin{array}{lllllllllllllllllllllllllllllllllll$	
[M + H]^{+} & -1.4 \\ [M - H]^{-} & -1.4 \\ [M + H]^{+} & -1.4 \\ [M - H]^{-} & -1.4 \\ [M + H]^{+} & -1.4 \\ [M + H]^{+} & -1.4 \\ [M - H]^{-} & -1.4 \\ [M + H]^{+} & -1.4 \\ [M + $        | $ \begin{bmatrix} M - H \end{bmatrix}^{-} & -0.9 \\ [M - H]^{-} & -1.1 \\ [M + H]^{+} & [M + H]^{+} \\ [M + H]^{+} & 0.33 \\ [M + H]^{+} & 0.56 \\ [M + H]^{+} & 0.53 \\ [M + H]^{+} & 0.53 \\ [M + H]^{+} & 0.53 \\ [M - H]^{-} & -1.5 \\ [M - H]^{-} & -1.6 \\ [M + H]^{+} & 0.38 \\ [M + H]^{+} & 0.38 \\ [M + H]^{+} & 0.34 \\ [M + H]^{+} & 0.34$  | $\begin{bmatrix} M - H \end{bmatrix}^{-} & -0.9 \\ \begin{bmatrix} M - H \end{bmatrix}^{-} & -1.1 \\ \begin{bmatrix} M + H \end{bmatrix}^{+} & 0.83 \\ \begin{bmatrix} M + H \end{bmatrix}^{+} & 0.36 \\ \begin{bmatrix} M + H \end{bmatrix}^{+} & 0.56 \\ \begin{bmatrix} M + H \end{bmatrix}^{+} & 0.56 \\ \begin{bmatrix} M + H \end{bmatrix}^{+} & 0.56 \\ \begin{bmatrix} M + H \end{bmatrix}^{+} & 0.52 \\ \begin{bmatrix} M + H \end{bmatrix}^{+} & 0.52 \\ \begin{bmatrix} M - H \end{bmatrix}^{-} & -1.3 \\ \begin{bmatrix} M - H \end{bmatrix}^{-} & 0.52 \\ \begin{bmatrix} M + H \end{bmatrix}^{+} & 0.56 \\ \begin{bmatrix} M - H \end{bmatrix}^{-} & 0.52 \\ \begin{bmatrix} M + H \end{bmatrix}^{+} & 0.56 \\ \begin{bmatrix} M - H \end{bmatrix}^{-} & -1.5 \\ \begin{bmatrix} M + H \end{bmatrix}^{+} & 0.52 \\ \begin{bmatrix} M - H \end{bmatrix}^{-} & -1.5 \\ \begin{bmatrix} M - H \end{bmatrix}^{-} & 0.24 \\ \end{bmatrix}$   | $ \begin{bmatrix} M - H \end{bmatrix}^{-} & -0.9 \\ [M - H]^{-} & -1.1 \\ [M + H]^{+} & 0.83 \\ [M + H]^{+} & 0.36 \\ [M + H]^{+} & 0.56 \\ [M + H]^{+} & 0.56 \\ [M + H]^{+} & 0.56 \\ [M - H]^{-} & 0.53 \\ [M - H]^{-} & 0.38 \\ [M - H]^{-} & 0.38 \\ [M - H]^{-} & -1.4 \\ [M - H]^{-} & 0.38 \\ [M - H]^{-} & 0.38 \\ [M - H]^{-} & -1.4 \\ [M - H]^{-} & 0.38 \\ [M -$  | $ \begin{array}{llllllllllllllllllllllllllllllllllll$  | $\begin{array}{cccccccccccccccccccccccccccccccccccc$   
   | $\begin{array}{cccc} H \\ H \\ - & -0.9 \\ H \\ H \\ - & -1.1 \\ H \\ H \\ - & -1.2 \\ H \\ H \\ - & -1.3 \\ H \\ - & -1.3 \\ H \\ - & -1.3 \\ H \\ - & -1.4 \\ H \\ - & -1.5 \\ H \\ - & -1.4 \\ H \\ - & -1.2 \\ H \\ - & -0.2 \\ H \\ - & -0.2 \\ H \\ - & -0.2 \\ H \\ - & -0.5 \\ H \\ - & -0$   | $\begin{bmatrix} -0.9\\ -1.1\\ -1.2\\ -1$  
   
  | $\begin{array}{cccccccccccccccccccccccccccccccccccc$   | $\begin{array}{cccccccccccccccccccccccccccccccccccc$   | $\begin{array}{cccccccccccccccccccccccccccccccccccc$   
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            | $\begin{array}{c} -0.9\\ -1.1\\ -1.1\\ 0.83\\ -1.2\\ 0.56\\ 0.53\\ -1.3\\ 0.56\\ -1.3\\ -1.3\\ -1.3\\ -1.2\\$   | $\begin{array}{c} -0.9\\ -1.1\\ -1.2\\ 0.83\\ -1.2\\ 0.53\\ -1.5\\ 0.53\\ -1.5\\ -1.2\\$ | $\begin{array}{c} -0.9\\ -1.1\\ -1.1\\ -1.2\\$   | $\begin{array}{c} -0.9\\ -1.1\\ -1.1\\ -1.2\\
-1.2\\ -1.2\\$   |
| 77.14071 $[M - H]^-$ -1.         71.20060 $[M + H]^+$ 0.83         45.07816 $[M - H]^-$ -1.         55.16515 $[M + H]^+$ 0.36         55.16515 $[M + H]^+$ 0.56         55.16515 $[M + H]^+$ 0.57         57.1833 $[M + H]^+$ 0.56         59.07051 $[M + H]^+$ 0.57         57.18134 $[M + H]^+$ 0.57         57.18134 $[M + H]^+$ 0.57   |  | $ \begin{array}{cccccccccccccccccccccccccccccccccccc$   | $ \begin{bmatrix} M & -H \\ M & -H \end{bmatrix}^{-} \\ = \begin{bmatrix} M & +H \\ -H \end{bmatrix}^{+} \\ = \begin{bmatrix} M & +H \\ -H \end{bmatrix}^{+} \\ = \begin{bmatrix} M & +H \\ -H \end{bmatrix}^{+} \\ = \begin{bmatrix} M & +H \\ -H \end{bmatrix}^{+} \\ = \begin{bmatrix} M & +H \\ -H \end{bmatrix}^{-} \\ = \begin{bmatrix} M & -H \\ -H \end{bmatrix}^{-} \\ = \begin{bmatrix} -1 \\ -1 \end{bmatrix}$ | $\begin{bmatrix} M & - H \end{bmatrix}^{-} \\ \begin{bmatrix} M & + H \end{bmatrix}^{+} \\ \begin{bmatrix} M & - H \end{bmatrix}^{-} \\ \begin{bmatrix} M & - H \end{bmatrix}^{-} \\ \begin{bmatrix} M & - H \end{bmatrix}^{-} \\ \end{bmatrix} $  | $ \begin{bmatrix} M & - H \end{bmatrix}^{-} \\ \begin{bmatrix} M & + H \end{bmatrix}^{+} \\ \begin{bmatrix} M & - H \end{bmatrix}^{-} \\ \begin{bmatrix} M & - H \end{bmatrix}^{-} \\ \begin{bmatrix} M & + H \end{bmatrix}^{+} \\ \begin{bmatrix} M & - H \end{bmatrix}^{-} \\ \begin{bmatrix} 0.35 \\ 0.55 \\ 0.56 \\ \end{bmatrix} $   
   | $ \begin{bmatrix} M & - H \end{bmatrix}^{-} \\ \begin{bmatrix} M & + H \end{bmatrix}^{+} \\ \begin{bmatrix} M & + H \end{bmatrix}^{-} \\ \begin{bmatrix} M & + H \end{bmatrix}^{-} \\ \begin{bmatrix} M & + H \end{bmatrix}^{+} \\ \begin{bmatrix} M & - H \end{bmatrix}^{-} \\ \end{bmatrix} $  | $ \begin{bmatrix} M & - H \end{bmatrix}^{-} \\ [M & - H]^{-} \\ [M & - H]^{+} \\ [M & - H]^{-} \\ [M & + H]^{+} \\ [M & + H]^{+} \\ [M & + H]^{+} \\ [M & - H]^{-} \\ [M & - H]$  | $ \begin{array}{cccccccccccccccccccccccccccccccccccc$  | $ \begin{array}{c} - \mathbf{H} \\ + $ | $ \begin{array}{cccccccccccccccccccccccccccccccccccc$  
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| 71.20060 $[M + H]^+$ 45.07816 $[M - H]^-$ 55.16515 $[M + H]^+$ 55.12833 $[M + H]^+$ 55.12833 $[M + H]^+$ 99.07051 $[M + H]^+$ 97.18134 $[M - H]^+$ 97.18134 $[M + H]^+$  | 20060 $[M + H]^+$ 07816 $[M - H]^-$ 16515 $[M + H]^+$ 12833 $[M + H]^+$ 07051 $[M + H]^+$ 07053 $[M + H]^+$ 07054 $[M + H]^+$ 07053 $[M + H]^+$ 25108 $[M + H]^+$ 09138 $[M + H]^+$ 09138 $[M - H]^-$  | $ \begin{array}{c} 060 & [M + H]^+ \\ 816 & [M - H]^- \\ 515 & [M + H]^+ \\ 833 & [M + H]^+ \\ 051 & [M + H]^+ \\ 108 & [M - H]^- \\ 134 & [M + H]^+ \\ 138 & [M - H]^- \\ 138 & [M - H]^- \\ 135 & [M - H]^- \\ 135 & [M - H]^- \\ 147 & [M - H]^- \\ 148 $ | $\begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \\ \end{array} \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} $   | $\begin{array}{cccc} & - & - & - & - & - & - & - & - & - & $  
  | $ \begin{bmatrix} M \\ M \end{bmatrix}_{+}^{+} \begin{bmatrix} M \\ M \end{bmatrix}_{+} \begin{bmatrix} M \\ M \\ M \end{bmatrix}$ | [M + H]<br>[M - H]<br>[M - H]<br>[M - H]<br>[M + H]<br>[M + H]<br>[M + H]<br>[M + H]<br>[M - H]<br>[M - H]<br>[M - H]<br>[M + H]<br>[M - H]<br>[M | -[H + M]<br>-[H + M]<br>-[ | M M M M M M M M M M M M M M M M M M M  | +++++-++++-+++++++++++++++++++++++++   | ਸ਼ੑੑਜ਼ੑਜ਼ੑਸ਼ੑਸ਼ੑਸ਼ੑਸ਼ੑਸ਼ੑਸ਼ੑਜ਼ੑਜ਼ੑਜ਼ੑੑੑੑਜ਼  | +  
   
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| 45.07816 [h<br>35.16515 [h<br>35.12833 [h<br>35.12833 [h<br>35.12833 [h<br>35.12833 [h<br>37.18134 [h<br>37.18134 [h]  | 07816 [h<br>16515 [h<br>12833 [h<br>12833 [h<br>12833 [h<br>12833 [h<br>12833 [h<br>18134 []<br>18134 []<br>18134 []<br>18134 []<br>23656 []   | 816<br>5515<br>051<br>134<br>138<br>133<br>138<br>135<br>135<br>138<br>135<br>135<br>135<br>135<br>137<br>138<br>138<br>138<br>138<br>138<br>138<br>138<br>138<br>138<br>138  |  
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| 289.07066<br>649.25018<br>597.18140  | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532  | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176  | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176   
  | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>623.16176<br>407.13476   | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>623.16176<br>407.13476<br>247.09649<br>247.09649  | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>407.13476<br>247.09649<br>595.16575<br>861.18837  
   | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>623.16176<br>247.09649<br>595.16575<br>861.18837<br>593.15119  | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>623.16176<br>623.16176<br>595.16575<br>861.18837<br>593.15119<br>533.106628  | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>623.16176<br>623.16176<br>595.16575<br>861.18837<br>593.15119<br>231.06628<br>581.18628<br>581.18648<br>579.17083   
  | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>623.16176<br>407.13476<br>5247.09649<br>595.16575<br>861.18837<br>593.15119<br>231.06628<br>531.18648<br>577.15628  | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>623.16176<br>407.13476<br>5247.09649<br>595.16575<br>861.18837<br>593.15119<br>231.06628<br>531.18648<br>577.15628<br>577.15628  
   
   | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>407.13476<br>595.16575<br>861.18837<br>593.15119<br>231.06628<br>581.18848<br>579.17083<br>577.15628<br>623.19814<br>479.11950   | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>407.13476<br>5247.09649<br>595.16575<br>861.18837<br>593.15119<br>231.06628<br>581.18648<br>579.17083<br>577.15628<br>623.19814<br>479.11950<br>435.12857  | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>623.16176<br>623.16176<br>407.13476<br>595.16575<br>861.18837<br>593.15119<br>593.15119<br>531.18648<br>531.18648<br>577.15628<br>623.19814<br>479.11950<br>435.12857   
   | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>623.16176<br>407.13476<br>525.16575<br>861.18837<br>593.15119<br>593.15119<br>231.06628<br>581.18648<br>577.15628<br>623.19814<br>479.11950<br>435.12857<br>419.13366<br>581.18648   | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>623.16176<br>623.16175<br>595.16575<br>861.18837<br>595.16575<br>593.15119<br>231.06628<br>581.18648<br>579.17984<br>579.17983<br>577.15628<br>623.19814<br>479.11950<br>419.13366<br>581.18648<br>885.18486   | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>407.13476<br>595.16575<br>861.18837<br>593.15119<br>231.06628<br>581.18648<br>579.17083<br>577.15628<br>623.19814<br>479.11950<br>435.12857<br>419.13366<br>581.18648<br>885.18486<br>623.19814   | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>407.13476<br>5247.09649<br>595.16575<br>861.18837<br>593.15119<br>231.06628<br>581.18648<br>579.17083<br>577.15628<br>623.19814<br>479.11950<br>435.12857<br>419.13366<br>581.18648<br>885.18486<br>623.19814<br>623.19814  
  | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>407.13476<br>595.16575<br>861.18837<br>593.15119<br>231.06649<br>593.15119<br>231.06649<br>579.178648<br>579.178648<br>579.178648<br>579.178648<br>623.19814<br>479.11950<br>435.12857<br>419.13366<br>581.18648<br>885.18486<br>623.19814<br>475.08740<br>579.17083   | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>407.13476<br>525.16575<br>861.18837<br>593.15119<br>231.06628<br>581.18648<br>579.17083<br>577.15628<br>623.19814<br>479.11950<br>479.11950<br>479.11950<br>885.18486<br>581.18648<br>885.18486<br>577.17083<br>623.19814<br>475.08740<br>579.17083  | 289.07066<br>649.25018<br>597.18140<br>287.09140<br>771.23532<br>623.16176<br>623.16176<br>407.13476<br>5247.09649<br>593.15119<br>593.15119<br>231.06628<br>581.18848<br>577.15628<br>623.19814<br>479.11950<br>435.12857<br>419.13366<br>581.18648<br>885.18486<br>623.19814<br>479.13366<br>579.17083<br>609.18140<br>449.14422<br>579.17083  
   |
| $\begin{array}{ccc} C_{15}H_{12}O_6 & 28\\ C_{32}H_{42}O_{14} & 64\\ C_{27}H_{32}O_{15} & 59\\ C_{27}H_{32}O_{15} & 59\\ \end{array}$  | $\begin{array}{c} C_{15}H_{12}O_6 \\ C_{32}H_{42}O_{14} \\ C_{27}H_{32}O_{15} \\ C_{27}H_{32}O_{15} \\ C_{16}H_{14}O_5 \\ C_{34}H_{44}O_{30} \end{array} \\ \begin{array}{c} 28 \\ 77 \end{array}$   | $\begin{array}{ccc} C_{15}H_{12}O_6 & 28\\ C_{32}H_{42}O_{14} & 64\\ C_{27}H_{32}O_{15} & 55\\ C_{16}H_{14}O_5 & 55\\ C_{34}H_{44}O_5 & 28\\ C_{34}H_{44}O_{20} & 77\\ C_{28}H_{32}O_{16} & 62\\ \end{array}$   | $\begin{array}{ccc} C_{15}H_{12}O_6 & & 28\\ C_{32}H_{42}O_{14} & & 64\\ C_{27}H_{32}O_{15} & & 55\\ C_{16}H_{14}O_5 & & 28\\ C_{34}H_{44}O_5 & & 77\\ C_{28}H_{32}O_{16} & & 62\\ C_{28}H_{32}O_{16} & & 62\\ \end{array}$  
  | $\begin{array}{c} C_{15}H_{12}O_6\\ C_{32}H_{42}O_{14}\\ C_{22}H_{32}O_{14}\\ C_{22}H_{32}O_{15}\\ C_{16}H_{14}O_5\\ C_{34}H_{44}O_{20}\\ C_{28}H_{32}O_{16}\\ C_{28}H_{32}O_{16}\\ C_{20}H_{24}O_9\\ C_{20}H_{24}O_9$ | $\begin{array}{cccc} C_{15}H_{12}O_6 & & \\ C_{32}H_{42}O_{14} & & \\ C_{23}H_{42}O_{14} & & \\ C_{23}H_{44}O_5 & & \\ C_{16}H_{44}O_5 & & \\ C_{34}H_{44}O_{20} & & \\ C_{28}H_{32}O_{16} & & \\ C_{28}H_{32}O_{16} & & \\ C_{20}H_{24}O_9 & & \\ C_{14}H_{14}O_4 & & \\ C_{24}H_{20}O_4 & &$   | $\begin{array}{cccc} C_{15}H_{12}O_6 & & 21\\ C_{32}H_{42}O_{14} & & 64\\ C_{27}H_{32}O_{15} & & 55\\ C_{16}H_{14}O_5 & & 55\\ C_{34}H_{44}O_{20} & & 77\\ C_{28}H_{32}O_{16} & & 62\\ C_{28}H_{32}O_{16} & & 62\\ C_{29}H_{34}O_9 & & 40\\ C_{14}H_{44}O_4 & & 24\\ C_{27}H_{30}O_{15} & & 55\\ C_{42}H_{38}O_{20} & & 86\\ \end{array}$   | $\begin{array}{cccc} C_{15}H_{12}O_6 & & 28\\ C_{32}H_{42}O_{14} & & 64\\ C_{27}H_{32}O_{15} & & 55\\ C_{16}H_{14}O_5 & & 55\\ C_{16}H_{14}O_5 & & 77\\ C_{28}H_{42}O_{20} & & 77\\ C_{28}H_{44}O_{20} & & 77\\ C_{28}H_{44}O_4 & & 24\\ C_{27}H_{30}O_{15} & & 55\\ \end{array}$  
   | $\begin{array}{c} C_{15}H_{12}O_6\\ C_{32}H_{42}O_{14}\\ C_{27}H_{42}O_{14}\\ C_{27}H_{42}O_{15}\\ C_{16}H_{14}O_5\\ C_{16}H_{14}O_5\\ C_{28}H_{32}O_{16}\\ C_{28}H_{32}O_{16}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{21}H_{12}O_4\\ C_{13}H_{12}O_4\\ C_{13}H_{12}O_4\\ C_{13}H_{12}O_4\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{20}O_{15}\\ C_{27}H_{20}\\ C_{27}H_{20}$   | $\begin{array}{cccccccccccccccccccccccccccccccccccc$   | $\begin{array}{cccccccccccccccccccccccccccccccccccc$  | $\begin{array}{cccccccccccccccccccccccccccccccccccc$   
   
   | $\begin{array}{rcccccccccccccccccccccccccccccccccccc$  | $\begin{array}{cccccccccccccccccccccccccccccccccccc$   
   | $\begin{array}{c} C_{15}H_{12}O_6\\ C_{32}H_{42}O_{14}\\ C_{32}H_{32}O_{15}\\ C_{32}H_{32}O_{15}\\ C_{16}H_{14}O_5\\ C_{16}H_{14}O_5\\ C_{28}H_{32}O_{16}\\ C_{28}H_{32}O_{16}\\ C_{28}H_{30}O_{15}\\ C_{28}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{14}\\ C_{27}H_{30}O_{14}\\ C_{27}H_{30}O_{14}\\ C_{27}H_{30}O_{14}\\ C_{27}H_{30}O_{14}\\ C_{27}H_{30}O_{14}\\ C_{28}H_{36}O_{15}\\ C_{28}H_{36}O_{15}\\ C_{28}H_{36}O_{15}\\ C_{28}H_{36}O_{16}\\ C_{21}H_{22}O_{10}\\ C_{21}H_$  | $\begin{array}{cccccccccccccccccccccccccccccccccccc$   | $\begin{array}{cccccccccccccccccccccccccccccccccccc$   | $\begin{array}{cccccccccccccccccccccccccccccccccccc$   
  | $\begin{array}{cccccccccccccccccccccccccccccccccccc$   | $\begin{array}{cccccccccccccccccccccccccccccccccccc$   | $\begin{array}{c} C_{15}H_{12}O_6\\ C_{32}H_{42}O_{14}\\ C_{27}H_{32}O_{15}\\ C_{27}H_{32}O_{15}\\ C_{14}H_{4}O_5\\ C_{27}H_{32}O_{15}\\ C_{14}H_{44}O_5\\ C_{28}H_{32}O_{16}\\ C_{28}H_{32}O_{16}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{14}\\ C_{27}H_{30}O_{16}\\ C_{27}H_{30}O_{16}\\ C_{27}H_{30}O_{16}\\ C_{27}H_{30}O_{16}\\ C_{27}H_{30}O_{12}\\ C_{28}H_{32}O_{16}\\ C_{28}H_{32}O_{16}\\ C_{28}H_{32}O_{16}\\ C_{28}H_{32}O_{15}\\ C_{28}H_{32}\\ C_{28}H_{32}O_{15}\\ C_{28}H_{32}\\ C_{28}H_{32}\\$   | $\begin{array}{c} C_{15}H_{12}O_6\\ C_{32}H_{42}O_{14}\\ C_{23}H_{42}O_{14}\\ C_{23}H_{42}O_{14}\\ C_{23}H_{42}O_{20}\\ C_{14}H_{44}O_5\\ C_{23}H_{44}O_{20}\\ C_{23}H_{44}O_{20}\\ C_{23}H_{44}O_{20}\\ C_{23}H_{44}O_{20}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{14}\\ C_{27}H_{30}O_{15}\\ C_{27}H_{30}O_{14}\\ C_{27}H_{30}O_{16}\\ C_{27}H_{30}O_{12}\\ C_{27}H_{30}O_{12}\\ C_{27}H_{30}O_{12}\\ C_{27}H_{30}O_{14}\\ C_{27}H_{20}O_{14}\\ C_{27}H_{20}\\ C_{27}H_{20}O_{14}\\ C_{27}H_{20}\\ C_{27}H_{20}\\ C_{27}H_{20}\\ C_{27}H_{20}\\ C_{27}H_{20}\\ C$   |
| Eriodictyol C <sub>15</sub> F<br>Limonin-17-β-D-glucoside C <sub>23</sub> F<br>Neoeriocitrin C <sub>27</sub> I   | Eriodictyol C <sub>15</sub> F<br>Limonin-17-β-D-glucoside C <sub>32</sub> F<br>Neoeriocitrin C <sub>27</sub> F<br>Isosakuranetin C <sub>16</sub> F<br>Alhazidin C <sub>34</sub> F  | Eriodictyol C <sub>15</sub> F<br>Limonin-17-β-D-glucoside C <sub>33</sub> F<br>Neoeriocitrin C <sub>23</sub> F<br>Isosakuranetin C <sub>34</sub> F<br>Alhagidin C <sub>34</sub> F<br>Cimamoyl-6-O-galloyl- C <sub>28</sub> F  | Eriodictyol $C_{15}F$<br>Limonin-17- $\beta$ - $p$ -glucoside $C_{27}^{2}F$<br>Neoeriocitrin $C_{27}F$<br>Isosakuranetin $C_{27}F$<br>Isosakuranetin $C_{26}F$<br>Alhagidin $C_{34}F$<br>Cinnamoyl-6- $O$ -galloyl- $C_{28}F$<br>diglucoside   
  | Eriodictyol C <sub>15</sub> F<br>Limonin-17-β-D-glucoside C <sub>25</sub> F<br>Neoeriocitrin C <sub>27</sub> F<br>Isosakuranetin C <sub>16</sub> F<br>Alhagidin C <sub>34</sub> F<br>Cinnamoyl-6- <i>O</i> -galloyl- C <sub>28</sub> F<br>diglucoside Nodakenin C <sub>20</sub> F  | Eriodictyol $C_{15}^{15}$<br>Limonin-17- $\beta$ - $p$ -glucoside $C_{27}^{21}$<br>Neoeriocitrin $C_{27}^{21}$<br>Isosakuranetin $C_{26}^{16}$<br>Alhagidin $C_{16}^{16}$<br>Alhagidin $C_{26}^{16}$<br>diglucoside $C_{26}^{16}$<br>Nodakenin $C_{26}^{14}$<br>Warmesin $C_{26}^{14}$  | Eriodictyol C <sub>15</sub> F<br>Limonin-17-β-D-glucoside C <sub>23</sub> F<br>Neoeriocitrin C <sub>23</sub> F<br>Isosakuranetin C <sub>16</sub> F<br>Alhagidin C <sub>34</sub> F<br>Alhagidin C <sub>34</sub> F<br>Cinnamoyl-6- <i>O</i> -galloyl- C <sub>24</sub> F<br>diglucoside Nodakenin C <sub>14</sub> F<br>Nodakenin C <sub>14</sub> F<br>Warmesin C <sub>14</sub> F<br>Veronicastroside B C <sub>27</sub> F   
   | $ \begin{array}{llllllllllllllllllllllllllllllllllll$  | Eriodictyol C <sub>13</sub> F<br>Limonin-17-β-D-glucoside C <sub>13</sub> F<br>Neoeriocitrin C <sub>27</sub> F<br>Isosakuranetin C <sub>16</sub> F<br>Alhagidin C <sub>16</sub> F<br>Alhagidin C <sub>34</sub> F<br>Cinnamoyl-6-O-galloyl- C <sub>28</sub> F<br>diglucoside C <sub>20</sub> F<br>Natmesin C <sub>20</sub> F<br>Natmesin C <sub>27</sub> F<br>Sennoside B C <sub>27</sub> F<br>Sennoside B C <sub>27</sub> F<br>Sennoside B C <sub>27</sub> F<br>Emodin-O-di-glucoside C <sub>27</sub> F  | Eriodictyol $C_{15}^{\rm F}$<br>Limonin-17- $\beta$ -D-glucoside $C_{23}^{\rm S}$<br>Neoeriocitrin $C_{23}^{\rm F}$<br>Isosakuranetin $C_{23}^{\rm S}$<br>Alhagidin $C_{23}^{\rm H}$<br>Cinnamoyl-6- $O$ -galloyl- $C_{23}^{\rm S}$<br>diglucoside $C_{23}^{\rm S}$<br>Nodakenin $C_{24}^{\rm S}$<br>Marmesin $C_{24}^{\rm S}$<br>Sennoside B<br>Emodin- $O$ -di-glucoside $C_{27}^{\rm S}$<br>Sennoside B<br>Emodin- $O$ -di-glucoside $C_{27}^{\rm S}$<br>Narirutin $C_{24}^{\rm S}$  
  | Eriodictyol $C_{13}^{\rm F}$<br>Limonin-17- $\beta$ -D-glucoside $C_{23}^{\rm F}$<br>Neoeriocitrin $C_{16}^{\rm F}$<br>Isosakuranetin $C_{23}^{\rm H}$<br>Alhagidin $C_{23}^{\rm H}$<br>Cinnamoyl-6- $O$ -galloyl- $C_{23}^{\rm H}$<br>Cinnamoyl-6- $O$ -galloyl- $C_{24}^{\rm C}$<br>Marmesin $C_{27}^{\rm H}$<br>Nodakenin $C_{27}^{\rm H}$<br>Veronicastroside $C_{27}^{\rm H}$<br>Sennoside B<br>Emodin- $O$ -di-glucoside $C_{27}^{\rm H}$<br>Isorhoifolin $C_{27}^{\rm H}$<br>Isorhoifolin $C_{27}^{\rm H}$   | EriodictyolClishLimonin-17- $\beta$ -D-glucosideClishNeoeriocitrinClishIsosakuranetinClishAlhagidinClishAlhagidinClishCinnamoyl-6-O-galloyl-ClishCinnamoyl-6-O-galloyl-ClishCinnamoyl-6-O-galloyl-ClishMarmesinClishNodakeninClishNodakeninClishNodakeninClishNordiceClishVeronicastrosideClishVeronicastrosideClishNarirutinClishNarirutinClishNarirutinClishSonhoifolinClishCassiachromoneClishCassiachromoneClishCassiachromoneClishNarirutinClishSonhoifolinClishChrysophanol-1,8-0-displucosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClishCastiactosideClish </td <td>Eriodictyol C<sub>13</sub>F<br/>Limonin-17-<math>\beta</math>-D-glucoside C<sub>13</sub>F<br/>Neoeriocitrin C<sub>14</sub>F<br/>Isosakuranetin C<sub>23</sub>F<br/>Isosakuranetin C<sub>23</sub>F<br/>Alhagidin C-0-galloyl- C<sub>23</sub>F<br/>diglucoside C<sub>24</sub>F<br/>Nodakenin Marmesin C<sub>23</sub>F<br/>Veronicastroside C<sub>27</sub>F<br/>Sennoside B<br/>Emodin-0-di-glucoside C<sub>27</sub>F<br/>Cassiachromone C<sub>27</sub>F<br/>Isorhoifolin C-di-glucoside C<sub>27</sub>F<br/>Narirutin C<sub>27</sub>F<br/>Isorhoifolin C<sub>27</sub>F<br/>Sennoside C<sub>27</sub>F<br/>Sennoside C<sub>27</sub>F<br/>Chrysophanol-1,8-O-di-glucoside C<sub>27</sub>F<br/>Acteoside C<sub>27</sub>F</td> <td>EriodictyolClishLimonin-17-<math>\beta</math>-D-glucosideClishNeoeriocitrinClishNeoeriocitrinClishSosakuranetinClishAlhagidinClishCinnamoyl-6-O-galloyl-ClishCinnamoyl-6-O-galloyl-ClishMarmesinClishNodakeninClishMarmesinClishVeronicastrosideClishVeronicastrosideClishVeronicastrosideClishVeronicastrosideClishNarirutinClishNarirutinClishNarirutinClishSennosideClishNarirutinClishNarirutinClishSennosideClishSennosideClishSennosideClishVeronicastrosideClishVeronicastrosideClishSennosideClishSennosideClishSennosideClishNarirutinClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSenno</td> <td>Eriodictyol <math>C_{13}^{\rm F}</math><br/>Limonin-17-<math>\beta</math>-p-glucoside <math>C_{23}^{\rm F}</math><br/>Neoeriocitrin <math>C_{16}^{\rm F}</math><br/>Isosakuranetin <math>C_{24}^{\rm C}</math><br/>Alhagidin <math>C_{20}^{\rm H}</math><br/>Alhagidin <math>C_{20}^{\rm H}</math><br/>Cinnamoyl-6-<math>O</math>-galloyl-<math>C_{20}^{\rm C}</math><br/>Nodakenin <math>C_{21}^{\rm H}</math><br/>Nodakenin <math>C_{27}^{\rm H}</math><br/>Veronicastroside <math>C_{27}^{\rm C}</math><br/>Sennoside <math>B</math><br/>Emodin-<math>O</math>-di-glucoside <math>C_{27}^{\rm C}</math><br/>Sennoside <math>B</math><br/>Carsiachromone <math>C_{27}^{\rm H}</math><br/>Narrutin <math>C_{27}^{\rm H}</math><br/>Isorhoifolin <math>C_{27}^{\rm H}</math><br/>Chrysophanol-1,8-<math>O</math>-di-glucoside <math>C_{27}^{\rm C}</math><br/>Acteoside <math>C_{27}^{\rm C}</math><br/>Acteoside <math>C_{27}^{\rm H}</math><br/>Prunin <math>C_{21}^{\rm H}</math><br/>Prunin <math>C_{21}^{\rm H}</math></td> 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C<sub>21</sub>F<br/>Natrudaidai C<sub>21</sub>F<br/>Natrusgin C<sub>21</sub>F<br/>Natrusgin C<sub>21</sub>F<br/>Sennoside A<br/>Isoacteoside C<sub>27</sub>F</td> <td>iodictyol clish<br/>monin-17-β-p-glucoside Clish<br/>asakuranetin Clish<br/>hagidin mamoyl-6-O-galloyl- Clish<br/>mamoyl-6-O-galloyl-
Clish<br/>mamoyl-6-O-galloyl- Clish<br/>clish<br/>odakenin Clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>clish<br/>cli</td> 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<math>C_{27}^{h}</math><br/><math>C_{21}^{h}</math><br/><math>C_{21}^{h}</math><br/><math>C_{21}^{h}</math><br/><math>C_{22}^{h}</math><br/><math>C_{23}^{h}</math><br/><math>C_{23}^{h}</math><br/><math>C_{24}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{27}^{h}</math><br/><math>C_{28}^{h}</math><br/><math>C_{28}^{h}</math></td> <td>ictyol in 17-β-D-glucoside <math>C_{13}^{15}</math><br/>iocitrin <math>C_{14}^{15}</math><br/>uranetin <math>C_{23}^{16}</math><br/>umoyl-6-O-galloyl- <math>C_{23}^{16}</math><br/>idin <math>C_{14}^{16}</math><br/>moyl-6-O-galloyl- <math>C_{24}^{16}</math><br/>idin <math>C_{21}^{14}</math><br/>kenin <math>C_{21}^{14}</math><br/>icastroside <math>C_{27}^{16}</math><br/>icastroside <math>C_{27}^{16}</math><br/>side B <math>C_{27}^{16}</math><br/>icastroside <math>C_{27}^{16}</math><br/>side B <math>C_{27}^{16}</math><br/>in <math>C_{27}^{16}</math><br/>in <math>C_{27}^{16}</math><br/>side A
<math>C_{21}^{16}</math><br/>idaidai <math>C_{22}^{16}</math><br/>side A <math>C_{22}^{16}</math><br/>idaidai <math>C_{22}^{16}</math><br/>idaidai <math>C_{22}^{16}</math><br/>side A <math>C_{22}^{16}</math><br/>is acid-D-<math>O</math>-glucoside <math>C_{23}^{16}</math><br/>is arith <math>C_{22}^{16}</math><br/>it arith <math>C_{22}^{16}</math><br/>it arith <math>C_{22}^{16}</math><br/>it arith <math>C_{21}^{16}</math><br/>it arith <math>C_{22}^{16}</math><br/>it arith <math>C_{23}^{16}</math></td> | Eriodictyol C <sub>13</sub> F<br>Limonin-17- $\beta$ -D-glucoside C <sub>13</sub> F<br>Neoeriocitrin C <sub>14</sub> F<br>Isosakuranetin C <sub>23</sub> F<br>Isosakuranetin C <sub>23</sub> F<br>Alhagidin C-0-galloyl- C <sub>23</sub> F<br>diglucoside C <sub>24</sub> F<br>Nodakenin Marmesin C <sub>23</sub> F<br>Veronicastroside C <sub>27</sub> F<br>Sennoside B<br>Emodin-0-di-glucoside C <sub>27</sub> F<br>Cassiachromone C <sub>27</sub> F<br>Isorhoifolin C-di-glucoside C <sub>27</sub> F<br>Narirutin C <sub>27</sub> F<br>Isorhoifolin C <sub>27</sub> F<br>Sennoside C <sub>27</sub> F<br>Sennoside C <sub>27</sub> F<br>Chrysophanol-1,8-O-di-glucoside C <sub>27</sub> F<br>Acteoside C <sub>27</sub> F  | EriodictyolClishLimonin-17- $\beta$ -D-glucosideClishNeoeriocitrinClishNeoeriocitrinClishSosakuranetinClishAlhagidinClishCinnamoyl-6-O-galloyl-ClishCinnamoyl-6-O-galloyl-ClishMarmesinClishNodakeninClishMarmesinClishVeronicastrosideClishVeronicastrosideClishVeronicastrosideClishVeronicastrosideClishNarirutinClishNarirutinClishNarirutinClishSennosideClishNarirutinClishNarirutinClishSennosideClishSennosideClishSennosideClishVeronicastrosideClishVeronicastrosideClishSennosideClishSennosideClishSennosideClishNarirutinClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSennosideClishSenno   | Eriodictyol $C_{13}^{\rm F}$<br>Limonin-17- $\beta$ -p-glucoside $C_{23}^{\rm F}$<br>Neoeriocitrin $C_{16}^{\rm F}$<br>Isosakuranetin $C_{24}^{\rm C}$<br>Alhagidin $C_{20}^{\rm H}$<br>Alhagidin $C_{20}^{\rm H}$<br>Cinnamoyl-6- $O$ -galloyl- $C_{20}^{\rm C}$<br>Nodakenin $C_{21}^{\rm H}$<br>Nodakenin $C_{27}^{\rm H}$<br>Veronicastroside $C_{27}^{\rm C}$<br>Sennoside $B$<br>Emodin- $O$ -di-glucoside $C_{27}^{\rm C}$<br>Sennoside $B$<br>Carsiachromone $C_{27}^{\rm H}$<br>Narrutin $C_{27}^{\rm H}$<br>Isorhoifolin $C_{27}^{\rm H}$<br>Chrysophanol-1,8- $O$ -di-glucoside $C_{27}^{\rm C}$<br>Acteoside $C_{27}^{\rm C}$<br>Acteoside $C_{27}^{\rm H}$<br>Prunin $C_{21}^{\rm H}$<br>Prunin $C_{21}^{\rm H}$   
   | Eriodictyol $C_{13}$ Limonin-17- $\beta$ -p-glucoside $C_{33}$ Neoeriocitrin $C_{16}$ Isosakuranetin $C_{16}$ Alhagidin $C_{23}$ Cinnamoyl-6- $O$ -galloyl- $C_{20}$ Marmesin $C_{34}$ Vodakenin $C_{27}$ Nodakenin $C_{27}$ Sennoside $C_{27}$ Veronicastroside $C_{27}$ Sennoside B $C_{27}$ Cassiachronone $C_{27}$ Narrutin $C_{27}$ Isorhoifolin $C_{27}$ Sennoside $C_{27}$ Varirutin $C_{27}$ Narrutin $C_{27}$ Sennoside $C_{27}$ Narrutin $C_{27}$ Narutin $C_{27}$   | Eriodictyol $C_{13}^{\rm F}$<br>Limonin-17- $\beta$ -D-glucoside $C_{23}^{\rm H}$<br>Neoeriocitrin $C_{16}^{\rm H}$<br>Isosakuranetin $C_{23}^{\rm H}$<br>Alhagidin $C_{23}^{\rm H}$<br>Cinnamoyl-6- $O$ -galloyl- $C_{23}^{\rm H}$<br>diglucoside $C_{214}^{\rm H}$<br>Nodakenin $C_{27}^{\rm H}$<br>Veronicastroside $C_{27}^{\rm H}$<br>Sennoside $B$<br>Emodin- $O$ -di-glucoside $C_{27}^{\rm H}$<br>Sennoside $B$<br>Cassiachromone $C_{27}^{\rm H}$<br>Narriutin $C_{27}^{\rm H}$<br>Isorhoffolin $C_{27}^{\rm H}$<br>Sennoside $C_{27}^{\rm H}$<br>Sennoside $C_{27}^{\rm H}$<br>Narrutin $C_{27}^{\rm H}$<br>Subradiai $C_{27}^{\rm H}$<br>Salloyl-glucoside $C_{27}^{\rm H}$<br>Prunin $C_{27}^{\rm H}$<br>Sennoside $A$ $C_{27}^{\rm H}$<br>Sennoside $A$ $C_{27}^{\rm H}$  | Eriodictyol C <sub>13</sub> F<br>Limonin-17-β-D-glucoside C <sub>13</sub> F<br>Neoeriocitrin C <sub>14</sub> F<br>Isosakuranetin C <sub>14</sub> F<br>Alhagidin C <sub>20</sub> H<br>Alhagidin C <sub>20</sub> H<br>Cinnamoyl-6-O-galloyl- C <sub>20</sub> H<br>Marmesin C <sub>21</sub> F<br>Veronicastroside C <sub>27</sub> F<br>Sennoside B<br>Emodin-O-di-glucoside C <sub>27</sub> F<br>Sennoside B<br>C <sub>27</sub> F<br>Cassiachronone C <sub>27</sub> F<br>Narriutin C <sub>27</sub> F<br>Narriutin C <sub>27</sub> F<br>Isonhoifolin C <sub>27</sub> F<br>Chrysophanol-1, 8-O-di-glucoside C <sub>27</sub> F<br>Chrysophanol-1, 8-O-di-glucoside C <sub>27</sub> F<br>Sennoside A<br>C <sub>21</sub> F<br>Natrutin C <sub>21</sub> F<br>Natrudaidai C <sub>21</sub> F<br>Natrusgin C <sub>21</sub> F<br>Natrusgin C <sub>21</sub> F<br>Sennoside A<br>Isoacteoside C <sub>27</sub> F  | iodictyol clish<br>monin-17-β-p-glucoside Clish<br>asakuranetin Clish<br>hagidin mamoyl-6-O-galloyl- Clish<br>mamoyl-6-O-galloyl- Clish<br>mamoyl-6-O-galloyl- Clish<br>clish<br>odakenin
Clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>clish<br>cli | litcyol<br>min-17-β-p-glucoside<br>$C_{23}^{h}$<br>kuranetin<br>gidin<br>$C_{14}^{h}$<br>$C_{23}^{h}$<br>$C_{24}^{h}$<br>$C_{24}^{h}$<br>$C_{24}^{h}$<br>$C_{24}^{h}$<br>$C_{24}^{h}$<br>$C_{24}^{h}$<br>$C_{24}^{h}$<br>$C_{24}^{h}$<br>$C_{24}^{h}$<br>$C_{24}^{h}$<br>$C_{24}^{h}$<br>$C_{24}^{h}$<br>$C_{24}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^{h}$<br>$C_{25}^$   | lictyol<br>nin-17-β-p-glucoside $C_{13}^{h}$<br>riocitrin $C_{14}^{h}$<br>kuranetin $C_{23}^{h}$<br>kuranetin $C_{23}^{h}$<br>gidin $C_{23}^{h}$<br>amoyl-6- $O$ -galloyl- $C_{23}^{h}$<br>$C_{24}^{h}$<br>resin $C_{14}^{h}$<br>resin $C_{27}^{h}$<br>solutin $C_{27}^{h}$<br>side $B$ $C_{27}^{h}$<br>$C_{27}^{h}$<br>side $C_{27}^{h}$<br>side $C_{27}^{h}$<br>$C_{21}^{h}$<br>$C_{21}^{h}$<br>$C_{21}^{h}$<br>$C_{22}^{h}$<br>$C_{23}^{h}$<br>$C_{23}^{h}$<br>$C_{24}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{27}^{h}$<br>$C_{28}^{h}$<br>$C_{28}^{h}$   | ictyol in 17-β-D-glucoside $C_{13}^{15}$<br>iocitrin $C_{14}^{15}$<br>uranetin $C_{23}^{16}$<br>umoyl-6-O-galloyl- $C_{23}^{16}$<br>idin $C_{14}^{16}$<br>moyl-6-O-galloyl- $C_{24}^{16}$<br>idin $C_{21}^{14}$<br>kenin $C_{21}^{14}$<br>icastroside $C_{27}^{16}$<br>icastroside $C_{27}^{16}$<br>side B $C_{27}^{16}$<br>icastroside $C_{27}^{16}$<br>side B $C_{27}^{16}$<br>in $C_{27}^{16}$<br>in $C_{27}^{16}$<br>side A $C_{21}^{16}$<br>idaidai $C_{22}^{16}$<br>side A $C_{22}^{16}$<br>idaidai $C_{22}^{16}$<br>idaidai $C_{22}^{16}$<br>side A $C_{22}^{16}$<br>is acid-D- $O$ -glucoside $C_{23}^{16}$<br>is arith $C_{22}^{16}$<br>it arith $C_{22}^{16}$<br>it arith $C_{22}^{16}$<br>it arith $C_{21}^{16}$<br>it arith $C_{22}^{16}$<br>it arith $C_{23}^{16}$   
  |
| Eriodictyol<br>Limonin-17-β-D-glucoside<br>Neoeriocitrin   | Eriodictyol<br>Limonin-17-β-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin  | Eriodictyol<br>Limonin-17-β-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cimamoyl-6-O-galloyl-  | Eriodictyol<br>Limonin-17-β-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cinnamoyl-6-0-galloyl-<br>diglucoside   
  | Eriodictyol<br>Limonin-17-β-p-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cinnamoyl-6-0-galloyl-<br>diglucoside<br>Nodakenin<br>Marmeein  | Eriodictyol<br>Limonin-17-β-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cimamoyl-6- <i>O</i> -galloyl-<br>diglucoside<br>Nodakenin<br>Marmesin<br>Veronicasrtoside   | Eriodictyol<br>Limonin-17-B-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cinnamoyl-6-O-galloyl-<br>diglucoside<br>Nodakenin<br>Marmesin<br>Veronicastroside<br>Sennoside B  
   | Eriodictyol<br>Limonin-17-B-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cinnamoyl-6-O-galloyl-<br>diglucoside<br>Nodakenin<br>Marmesin<br>Veronicastroside<br>Sennoside B<br>Emodin-O-diglucoside   | Eriodictyol<br>Limonin-17-β-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cinnamoyl-6-O-galloyl-<br>diglucoside<br>Nodakenin<br>Marmesin<br>Veronicastroside<br>Sennoside B<br>Emodin-O-di-glucoside<br>Cassiachromone  | Eriodictyol<br>Limonin-17-β-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cinnamoyl-6-O-galloyl-<br>diglucoside<br>Nodakenin<br>Marmesin<br>Veronicastroside<br>Sennoside B<br>Emodin-O-di-glucoside<br>Cassiachromone<br>Narirutin<br>Isorhoifolin  
  | Eriodictyol<br>Limonin-17-β-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cinnamoyl-6-O-galloyl-<br>diglucoside<br>Nodakenin<br>Marmesin<br>Veronicastroside<br>Sennoside B<br>Emodin-O-di-glucoside<br>Cassiachromone<br>Narirutin<br>Isorhoifolin<br>Isorhoifolin  | Eriodictyol<br>Limonin-17-β-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cinnamoyl-6-O-galloyl-<br>diglucoside<br>Nodakenin<br>Marmesin<br>Veronicastroside<br>Sennoside B<br>Emodin-O-di-glucoside<br>Cassiachromone<br>Narirutin<br>Isorhoifolin<br>Isorhoifolin<br>Sorhoifolin<br>Schoside  
   
   | Eriodictyol<br>Limonin-17-β-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cinnamoyl-6-O-galloyl-<br>diglucoside<br>Nodakenin<br>Marmesin<br>Veronicastroside<br>Sennoside B<br>Emodin-O-di-glucoside<br>Cassiachromone<br>Narirutin<br>Isorhoifolin<br>Isorhoifolin<br>Chrysophanol-1,8-O-di-glucoside<br>Acteoside<br>1-Dihydro- <i>p</i> -coumaroyl-6-O-<br>galloyl-glucoside   | Eriodictyol<br>Limonin-17-β-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cinnamoyl-6-O-galloyl-<br>diglucoside<br>Nodakenin<br>Marmesin<br>Veronicastroside<br>Sennoside B<br>Emodin-O-di-glucoside<br>Sennoside B<br>Emodin-O-di-glucoside<br>Cassiachromone<br>Narirutin<br>Isorhoifolin<br>Isorhoifolin<br>Chrysophanol-1,8-O-di-glucoside<br>Acteoside<br>1-Dihydro- <i>P</i> -coumaroyl-6-O-<br>galloyl-glucoside<br>Prunin   | Eriodictyol<br>Limonin-17-B-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cinnamoyl-6-O-galloyl-<br>diglucoside<br>Nodakenin<br>Marmesin<br>Veronicastroside<br>Sennoside B<br>Ernodin-O-di-glucoside<br>Sennoside B<br>Ernodin-O-di-glucoside<br>Cassiachromone<br>Narrutin<br>Isorhoifolin<br>Chrysophanol-1,8-O-di-glucoside<br>Acteoside<br>1-Diltydro- <i>p</i> -coumaroyl-6-O-<br>galloyl-glucoside<br>Prunin<br>Prunin  
   | Eriodictyol<br>Limonin-17-β-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cinnamoyl-6-O-galloyl-<br>diglucoside<br>Nodakenin<br>Marmesin<br>Veronicastroside<br>Sennoside B<br>Emodin-O-di-glucoside<br>Sennoside B<br>Emodin-O-di-glucoside<br>Cassiachromone<br>Narrivtin<br>Isorhoifolin<br>Chrysophanol-1,8-O-di-glucoside<br>Acteoside<br>1-Dihydro- <i>p</i> -coumaroyl-6-O-<br>galloyl-glucoside<br>Prunin<br>Natsudaidai<br>Naringin  | Eriodictyol<br>Limonin-17-β-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cinnamoyl-6-O-galloyl-<br>diglucoside<br>Nodakenin<br>Nodakenin<br>Narmesin<br>Marmesin<br>Penolin-O-di-glucoside<br>Sennoside B<br>Emodin-O-di-glucoside<br>Cassiachromone<br>Narirutin<br>Isorhoifolin<br>Chrysophanol-1,8-O-di-glucoside<br>Acteoside<br>Acteoside<br>Prunin<br>Natsudaidai<br>Naringin<br>Sennoside A   | Eriodictyol<br>Limonin-17-β-D-glucoside<br>Neoeriocitrin<br>Isosakuranetin<br>Alhagidin<br>Cinnamoyl-6-O-galloyl-<br>diglucoside<br>Nodakenin<br>Marmesin<br>Veronicastroside<br>Sennoside B<br>Emodin-O-di-glucoside<br>Sennoside B<br>Emodin-O-di-glucoside<br>Cassiachromone<br>Narirutin<br>Isorhoifolin<br>Isorhoifolin<br>Isorhoifolin<br>Isorhoifolin<br>Isorhoifolin<br>Sennoside<br>Prunin<br>Natsudaidai<br>Naringin<br>Sennoside A   | iodictyol<br>monin-17-Bglucoside<br>coeriocitrin<br>sakuranetin<br>hagidin<br>mnamoyl-6-O-galloyl-<br>glucoside<br>odakenin<br>armesin<br>armesin<br>armesin<br>armesin<br>armeside<br>noside B<br>nodin-O-di-glucoside<br>noside B<br>nodin-O-di-glucoside<br>noside B<br>nodin-O-di-glucoside<br>noside B<br>nodin-O-di-glucoside<br>noside B<br>notirutin<br>rrutin<br>armeside<br>noside A<br>acteoside<br>ccaic acid-D-O-glucoside<br>ccaic acid-D-O-glucoside   
  | lictyol<br>nin-17-β-D-glucoside<br>rriocitrin<br>ukuranetin<br>gidin<br>amoyl-6- <i>O</i> -galloyl-<br>ucoside<br>akenin<br>mesin<br>nicastroside<br>oside<br>ain- <i>O</i> -di-glucoside<br>iachromone<br>tutin<br>noifolin<br>side<br>yl-glucoside<br>side<br>aid ai<br>adidai<br>ndaidai<br>ndaidai<br>ndaidai<br>side<br>A<br>folin<br>oside A<br>treoside<br>aic acid-D-O-glucoside<br>folin  | lictyol<br>nin-17-Bglucoside<br>riocitrin<br>kuranetin<br>kuranetin<br>kenin<br>amoyl-6-O-galloyl-<br>coside<br>kenin<br>nesin<br>nicastroside<br>oside B<br>oside B<br>eorhanol-1,8-O-di-glucoside<br>achromone<br>utin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oifolin<br>oside A<br>teoside<br>teoside<br>in cacid-D-O-glucoside<br>in cacid-D-O-glucoside<br>in coside<br>in cacid-D-O-glucoside<br>in coside<br>in coside<br>oifolin<br>oside A   | ictyol<br>in-17-β-D-glucoside<br>iocitrin<br>curanetin<br>idin<br>umoyl-6-O-galloyl-<br>coside<br>kenin<br>tesin<br>icastroside<br>side B<br>side B<br>side B<br>in-O-di-glucoside<br>side<br>in-O-di-glucoside<br>side<br>achromone<br>atin<br>ophanol-1,8-O-di-glucoside<br>side<br>tin<br>ophanol-1,8-O-di-glucoside<br>icaldai<br>gin<br>side A<br>side A<br>sid |
| Limonin-17- $\beta$ -D-glucoside $C_{22}H_{42}O_{14}$<br>Neoeriocitrin $C_{27}H_{32}O_{15}$  | Linear Linear Linear Contract $C_{22}H_{42}O_{44}O_{14}O_{14}O_{14}O_{14}O_{14}O_{14}O_{14}O_{16}O_{1$ | Limonicy of $C_{23}H_{42}O_{14}$<br>Limonicut 77- $\beta$ -n-glucoside $C_{22}H_{42}O_{14}$<br>Neoericitrin $C_{27}H_{32}O_{15}$<br>Isosakuranetin $C_{16}H_{14}O_5$<br>Alhagidin $C_{38}H_{44}O_5$<br>Cimamoyl-6- $O$ -galloyl- $C_{38}H_{32}O_{16}$   | Limonin-17- $\beta$ -p-glucoside $C_{22}H_{42}O_{14}$<br>Neoeriocitrin $C_{27}H_{32}O_{15}$<br>Isosakuranetin $C_{16}H_{14}O_{2}$<br>Alhagidin $C_{34}H_{44}O_{21}$<br>Cinnamoyl-6-O-galloyl- $C_{28}H_{34}O_{16}$   
  | Limonicy $C_{22}H_{22}O_{14}$<br>Limonin-17- $\beta$ -D-glucoside $C_{22}H_{22}O_{14}$<br>Neoeriocitrin $C_{24}H_{24}O_{5}$<br>Isosakuranetin $C_{16}H_{14}O_{5}$<br>Alhagidin $C_{28}H_{32}O_{16}$<br>diglucoside $C_{20}H_{32}O_{16}$<br>Nodakenin $C_{20}H_{24}O_{9}$   | Limonin-17-b-b-glucoside $C_{32}H_{32}O_{14}O_{14}O_{14}O_{14}O_{14}O_{14}O_{14}O_{14}O_{14}O_{14}O_{14}O_{16}O_{$  | Limonicy of<br>Limoniu-17-fb-b-glucoside $C_{32}H_{42}O_{14}$ Neoeriocitriin $C_{27}H_{32}O_{15}$ Isosakuranetin $C_{16}H_{14}O_5$ Isosakuranetin $C_{34}H_{44}O_5$ Alhagidin $C_{33}H_{24}O_4$ Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_4$ Giglucoside $C_{20}H_{34}O_5$ Nodakenin $C_{14}H_{14}O_4$ Warmesin $C_{27}H_{30}O_{15}$ Sennoside $C_{27}H_{30}O_{16}$   
   | Limonucyota Carthago Laboratory Carthago Limonucyota Carthago Limonucyota Carthago Carthago Limonucyota Carthago Cartha  | Limonicy $C_{22}H_{32}O_{14}O_{14}O_{2}O_{12}O_{14}O_{14}O_{2}O_{15}O_{16}O_{2}O_{2}O_{16}O_{2}O_{2}O_{16}O_{2}O_{2}O_{2}O_{2}O_{2}O_{2}O_{2}O_{2$  | Limonin-17-5-D-glucoside $C_{22}H_{32}O_{14}O_{14}O_{2}$<br>Neoeriocitrin $C_{27}H_{32}O_{15}O_{16}O_{12}O_{16}O_{16}O_{12}O_{16}O_{12}O_{16}O_{16}O_{12}O_{16}O_{16}O_{12}O_{16}O_{16}O_{12}O_{16}O_{12}O_{16}O_{16}O_{12}O_{16}O_{16}O_{12}O_{16$  |
Limonucyor<br>Limonucyor<br>Recensio:<br>Isosakuranetin<br>Sosakuranetin<br>Alhagidin<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh140<br>Cirh14 | Limonin-17- $\beta$ -Deglucoside C <sub>32</sub> H <sub>42</sub> O <sub>14</sub> 2O <sub>14</sub> 2O <sub>15</sub><br>Neoeriottrin C <sub>27</sub> H <sub>32</sub> O <sub>15</sub><br>Isosakuranetin C <sub>16</sub> H <sub>44</sub> O <sub>5</sub><br>SakH <sub>44</sub> O <sub>25</sub><br>C <sub>16</sub> H <sub>44</sub> O <sub>25</sub><br>C <sub>16</sub> H <sub>44</sub> O <sub>2</sub><br>C <sub>16</sub> H <sub>44</sub> O <sub>4</sub><br>C <sub>28</sub> H <sub>32</sub> O <sub>15</sub><br>C <sub>28</sub> H <sub>32</sub> O <sub>15</sub><br>Nodakenin C <sub>28</sub> H <sub>32</sub> O <sub>15</sub><br>Nodakenin C <sub>27</sub> H <sub>30</sub> O <sub>15</sub><br>Narmesin C <sub>27</sub> H <sub>30</sub> O <sub>15</sub><br>Sennoside B C <sub>27</sub> H <sub>30</sub> O <sub>15</sub><br>Sennoside B C <sub>27</sub> H <sub>30</sub> O <sub>15</sub><br>Cassiachromone C <sub>27</sub> H <sub>30</sub> O <sub>14</sub><br>Isorhoifolin C <sub>27</sub> H <sub>30</sub> O <sub>14</sub><br>Isorhoifolin C <sub>27</sub> H <sub>30</sub> O <sub>14</sub><br>Cassiachromone C <sub>27</sub> H <sub>30</sub> O <sub>14</sub><br>Isorhoifolin C <sub>27</sub> H <sub>30</sub> O <sub>14</sub><br>Acteoside C <sub>27</sub> H <sub>30</sub> O <sub>14</sub>  
   
   | Limonin-17- $\beta$ -D-glucoside C <sub>32</sub> H <sub>42</sub> O <sub>14</sub> 20<br>Neoericottrin C <sub>27</sub> H <sub>32</sub> O <sub>14</sub> O <sub>14</sub> O <sub>5</sub><br>Isosakuranetin C <sub>27</sub> H <sub>32</sub> O <sub>14</sub> O <sub>26</sub><br>Alhagidin C <sub>26</sub> H <sub>42</sub> O <sub>5</sub><br>Cinnamoyl-6-O-galloyl- C <sub>28</sub> H <sub>32</sub> O <sub>16</sub><br>diglucoside C <sub>26</sub> H <sub>43</sub> O <sub>16</sub><br>Nodakenin C <sub>27</sub> H <sub>30</sub> O <sub>16</sub><br>Narmesin C <sub>27</sub> H <sub>30</sub> O <sub>16</sub><br>Sennoside B C <sub>27</sub> H <sub>30</sub> O <sub>16</sub> O <sub>16</sub><br>Sennoside B C <sub>27</sub> H <sub>30</sub> O <sub>16</sub> O <sub>16</sub><br>Cassiachromone C <sub>27</sub> H <sub>30</sub> O <sub>14</sub> O <sub>12</sub> O <sub>14</sub> O <sub>16</sub><br>Narrutin C <sub>27</sub> H <sub>30</sub> O <sub>14</sub><br>Isorhoifolin C <sub>27</sub> H <sub>30</sub> O <sub>14</sub><br>Isorhoifolin C <sub>27</sub> H <sub>30</sub> O <sub>14</sub><br>Acteoside C <sub>27</sub> H <sub>30</sub> O <sub>14</sub><br>Acteoside C <sub>27</sub> H <sub>30</sub> O <sub>14</sub><br>Balloyl-glucoside C <sub>27</sub> H <sub>30</sub> O <sub>14</sub>   | Limonin-1, $-\beta$ - $-p$ glucoside $C_{22}H_{32}O_{14}O_{14}O_{2}$<br>Necoricutrin $C_{23}H_{42}O_{14}O_{25}O_{16}O$ | Limonicutor<br>Limonicutor<br>Neoeriocitrin<br>Isosakuranetin<br>Sosakuranetin<br>Sosakuranetin<br>Sosakuranetin<br>Sosakuranetin<br>CirkH <sub>4</sub> 00<br>CirkH <sub>4</sub> | Limonicular Control C  | Limonin-1-fb-D-glucoside $C_{22}H_{42}O_{14}O_{14}O_{5}$<br>Isosakurametin $C_{27}H_{42}O_{14}O_{5}$<br>Isosakurametin $C_{24}H_{42}O_{5}O_{16}O_{1$   |
Limonucyor<br>Limonucyor<br>Reconstrution<br>Isosakuranetin<br>Isosakuranetin<br>Isosakuranetin<br>Isosakuranetin<br>Rodakenin<br>Nodakenin<br>Nodakenin<br>Nodakenin<br>Nodakenin<br>Nodakenin<br>Nodakenin<br>Nodakenin<br>Nodakenin<br>Nodakenin<br>Sophao<br>Marmesin<br>Veronicastroside<br>Semoside<br>Bernodin-O-diglucoside<br>Caphao<br>Naritutin<br>Isorhoifolin<br>Caphao<br>Sennoside<br>Bernodin-O-diglucoside<br>Caphao<br>Naritutin<br>Isorhoifolin<br>Caphao<br>Naritutin<br>Caphao<br>Sennoside<br>Caphao<br>Naritutin<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Caphao<br>Ca | $ \begin{array}{llllllllllllllllllllllllllllllllllll$  | $a_{13}^{a_{12}a_{13}}$ $a_{14}^{a_{12}a_{13}}$ $a_{11}^{a_{11}a_{12}}$ $a_{14}^{a_{11}a_{13}}$ $a_{11}^{a_{11}a_{11}}$ $a_{21}^{a_{11}a_{13}}$ $a_{11}^{a_{11}a_{11}}$ $a_{21}^{a_{11}a_{13}}$ $a_{11}^{a_{11}a_{12}}$ $a_{21}^{a_{11}a_{13}}$ $a_{11}^{a_{11}a_{11}}$ $a_{22}^{a_{11}a_{23}}$ $a_{11}^{a_{11}a_{11}}$ $a_{22}^{a_{11}a_{13}}$ $a_{11}^{a_{11}a_{11}}$ $a_{22}^{a_{11}a_{13}}$ $a_{11}^{a_{11}a_{11}}$ $a_{22}^{a_{11}a_{23}}$ $a_{11}^{a_{11}a_{11}a_{12}$ $a_{22}^{a_{11}a_{23}}$ $a_{11}^{a_{11}a_{12}a_{12}$ $a_{22}^{a_{11}a_{23}}$ $a_{11}^{a_{12}a_{12}a_{12}$ $a_{22}^{a_{11}a_{23}$ $a_{12}^{a_{12}a_{12}a_{12}a_{12}$ $a$  | nim17-β-D-glucoside $C_{32}H_{42}O_{14}O_{12}$ riocitrin $C_{27}H_{32}O_{14}O_{23}O_{15}$ riocitrin $C_{26}H_{12}O_{25}O_{16}O_{12}$ amoyl-6-O-galloyl- $C_{20}H_{24}O_{23}O_{15}O_{14}O_{12}O_{15}O_{12$   
  | $\begin{array}{ccccc} & & & & & & & & & & & & & & & & &$   |
| Limonin-17-b-D-glucoside $C_{32}H_{42}O_{14}$ 649.25018<br>Neoeriocitrin $C_{27}H_{32}O_{15}$ 597.18140  | Limonin-17-b <sup>-</sup> D-glucoside $C_{32}H_{42}O_{14}$ 649.25018<br>Neoeriocitrin $C_{27}H_{32}O_{15}$ 597.18140<br>Isosakuranetin $C_{16}H_{14}O_5$ 287.09140<br>Alhagidin $C_{34}H_{44}O_{26}$ 771.23532   | Limonin-17-b <sup>-</sup> D-glucoside $C_{32}H_{42}O_{14}$ 649.25018<br>Neoeriocitrin $C_{27}H_{32}O_{15}$ 597.18140<br>Isosakuranetin $C_{16}H_{14}O_{5}$ 287.09140<br>Alhagidin $C_{34}H_{44}O_{20}$ 771.23532<br>Cinnamoyl-6- $O$ -galloyl- $C_{38}H_{32}O_{16}$ 623.16176   | Limonin-17-b <sup>3-D-</sup> glucoside $C_{32}H_{42}O_{14}$ 649.25018<br>Neoeriocitrin $C_{27}H_{32}O_{15}$ 597.18140<br>Isosakuranetin $C_{16}H_{14}O_5$ 287.09140<br>Alhagidin $C_{34}H_{44}O_{20}$ 771.23532<br>Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ 623.16176<br>diglucoside  
  | Limonin-17-b-D-glucoside $C_{32}H_{42}O_{14}$ 649.25018<br>Neoeriocitrin $C_{27}H_{32}O_{15}$ 597.18140<br>Isosakuranetin $C_{46}H_{44}O_5$ 287.09140<br>Alhagidin $C_{44}H_{44}O_{20}$ 771.23532<br>Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ 623.16176<br>diglucoside $C_{20}H_{24}O_9$ 407.13476<br>Nodakenin $C_{44}H_{20}O_5$ 407.13476   | Limonin-17-b <sup>-</sup> D-glucoside $C_{32}H_{42}O_{14}$ 649.25018<br>Neoeriocitrin $C_{27}H_{32}O_{15}$ 597.18140<br>Isosakuranetin $C_{16}H_{14}O_{5}$ 287.09140<br>Alhagidin $C_{34}H_{44}O_{20}$ 771.23532<br>Cinnamoyl-6- $O$ -galloyl- $C_{28}H_{32}O_{16}$ 623.16176<br>diglucoside $C_{20}H_{34}O_{9}$ 407.13476<br>Nodakenin $C_{14}H_{14}O_{4}$ 247.09649<br>Veronicastroside $C_{74}H_{26}O_{16}$ 595.16575  | Limonin-17- $\beta$ -D-glucoside $C_{32}H_{42}O_{14}$ 649.25018<br>Neoeriocitrin $C_{27}H_{32}O_{15}$ 597.18140<br>Isosakuranetin $C_{16}H_{14}O_5$ 287.09140<br>Alhagidin $C_{34}H_{44}O_{20}$ 771.23532<br>Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ 623.16176<br>diglucoside $C_{28}H_{32}O_{16}$ 623.16176<br>Marmesin $C_{20}H_{24}O_9$ 407.13476<br>Marmesin $C_{14}H_{14}O_4$ 247.09649<br>Veronicastroside $B$ $C_{27}H_{38}O_{20}$ 861.18837<br>Sennoside B $C_{42}H_{38}O_{20}$ 861.18837   
   | Limonin-17-b <sup>-</sup> D-glucoside $C_{32}H_{42}O_{14}$ 649.25018<br>Neoeriocitrin $C_{27}H_{32}O_{15}$ 597.18140<br>Isosakuranetin $C_{16}H_{14}O_5$ 287.09140<br>Alhagidin $C_{34}H_{44}O_{20}$ 771.23532<br>Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ 623.16176<br>diglucoside $C_{20}H_{24}O_9$ 407.13476<br>Marmesin $C_{20}H_{24}O_9$ 407.13476<br>Marmesin $C_{27}H_{30}O_{15}$ 595.16575<br>Sennoside B $C_{27}H_{30}O_{15}$ 595.16575<br>Emodin-O-di-glucoside $C_{27}H_{30}O_{15}$ 593.15119  | Limonin-17-b-D-glucoside $C_{32}H_{42}O_{14}$ 649.25018<br>Neoeriocitrin $C_{27}H_{32}O_{15}$ 597.18140<br>Isosakuranetin $C_{16}H_{14}O_5$ 287.09140<br>Alhagidin $C_{34}H_{44}O_{20}$ 771.23532<br>Cinnamcyl-6-O-gallcyl- $C_{28}H_{32}O_{16}$ 623.16176<br>diglucoside $C_{20}H_{24}O_9$ 407.13476<br>Nodakenin $C_{44}H_{44}O_4$ 247.09649<br>Marmesin $C_{27}H_{30}O_{15}$ 595.16575<br>Sennoside $B$ $C_{27}H_{30}O_{15}$ 595.16575<br>Sennoside $C_{27}H_{30}O_{15}$ 593.15119<br>Cassiachronone $C_{13}H_{12}O_4$ 231.06628  | Limonin-17-β-D-glucoside $C_{32}H_{42}O_{14}$ 649.25018<br>Neoeriocitrin $C_{27}H_{32}O_{15}$ 597.18140<br>Isosakuranetin $C_{16}H_{14}O_5$ 287.09140<br>Alhagidin $C_{16}H_{44}O_2$ 771.23532<br>Cimnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ 623.16176<br>diglucoside $C_{20}H_{24}O_9$ 407.13476<br>Nodakenin $C_{42}H_{30}O_{15}$ 593.16176<br>Marmesin $C_{42}H_{30}O_{15}$ 595.16575<br>Sentoside $C_{27}H_{30}O_{15}$ 593.15119<br>Carabitroside $C_{27}H_{30}O_{15}$ 593.15119<br>Carabitroside $C_{27}H_{30}O_{15}$ 593.15119<br>Carabitroside $C_{27}H_{30}O_{15}$ 593.15119<br>Carabitronone $C_{27}H_{30}O_{15}$ 593.15119<br>Carabitronone $C_{27}H_{30}O_{15}$ 593.15119<br>Carabitrotin $C_{27}H_{30}O_{15}$ 593.15119<br>Carabitrotin $C_{27}H_{30}O_{15}$ 593.15119<br>Carabitrotin $C_{27}H_{30}O_{15}$ 593.15119<br>Carabitrotin $C_{27}H_{30}O_{15}$ 593.15119<br>Carabitrotin $C_{27}H_{30}O_{15}$ 593.15119  
  | Limonin-17-β-D-glucoside $C_{32}H_{42}O_{14}$ 649.25018<br>Neoeriocitrin $C_{16}H_{4}O_5$ 597.18140<br>Isosakuranetin $C_{16}H_{4}O_5$ 287.09140<br>Alhagidin $C_{16}H_{4}O_2$ 287.09140<br>Alhagidin $C_{34}H_{4}O_{20}$ 771.23532<br>Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ 623.16176<br>diglucoside $C_{20}H_{24}O_9$ 407.13476<br>Marmesin $C_{20}H_{24}O_9$ 407.13476<br>Marmesin $C_{20}H_{44}O_4$ 247.09649<br>Veronicastroside $C_{77}H_{30}O_{15}$ 593.15119<br>Cassiachromone $C_{27}H_{30}O_{15}$ 593.15119<br>Cassiachromone $C_{27}H_{30}O_{15}$ 593.15119<br>Cassiachromone $C_{27}H_{30}O_{14}$ 581.18648<br>Isorhoifolin $C_{27}H_{30}O_{14}$ 571.10628<br>Narirutin $C_{27}H_{30}O_{14}$ 571.1083   | Limonin-17-β-D-glucoside $C_{32}H_{42}O_{14}$ 649.25018<br>Neoeriocitrin $C_{27}H_{32}O_{15}$ 597.18140<br>Isosakuranetin $C_{16}H_{14}O_5$ 287.09140<br>Alhagidin $C_{16}H_{44}O_2$ 771.23532<br>Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ 623.16176<br>diglucoside $C_{20}H_{24}O_9$ 407.13476<br>Marmesin $C_{20}H_{24}O_9$ 407.13476<br>$C_{14}H_{14}O_4$ 247.09649<br>Veronicastroside $C_{27}H_{30}O_{15}$ 595.16575<br>Sennoside B $C_{27}H_{30}O_{15}$ 593.15119<br>Cassiachromone $C_{27}H_{30}O_{15}$ 593.15119<br>Cassiachromone $C_{27}H_{30}O_{15}$ 593.15119<br>Cassiachromone $C_{27}H_{30}O_{14}$ 581.18648<br>Isorhoifolin $C_{27}H_{30}O_{14}$ 571.15628<br>Narirutin $C_{27}H_{30}O_{14}$ 571.15628<br>Acteoside $C_{27}H_{30}O_{15}$ 623.19814   
   
   | Limonin-17-β-D-glucoside $C_{22}H_{42}O_{14}$ 649.25018<br>Neoeriocitrin $C_{27}H_{32}O_{15}$ 597.18140<br>Isosakuranetin $C_{16}H_{44}O_5$ 287.09140<br>Cinhamcyl-6-O-galloyl- $C_{26}H_{34}O_{20}$ 771.23532<br>Cinnamcyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ 623.16176<br>diglucoside $C_{20}H_{24}O_9$ 407.13476<br>Marmesin $C_{20}H_{34}O_{20}$ 595.16575<br>Sentoside $C_{27}H_{30}O_{15}$ 595.16575<br>Sentoside $C_{27}H_{30}O_{15}$ 593.15119<br>Casiachromone $C_{27}H_{30}O_{14}$ 577.15628<br>Narirutin $C_{27}H_{30}O_{14}$ 579.17083<br>Chrysophanol-1, 8-O-di-glucoside $C_{27}H_{30}O_{14}$ 579.17083<br>Acteoside $C_{27}H_{30}O_{14}$ 579.17083<br>disorhoifolin $C_{27}H_{30}O_{14}$ 579.17083<br>detoside $C_{27}H_{30}O_{14}$ 579.17083<br>detoside $C_{27}H_{30}O_{14}$ 579.17083<br>detoside $C_{27}H_{30}O_{14}$ 579.17083<br>detoside $C_{27}H_{20}O_{12}$ 479.11950<br>galloyl-glucoside  | Limonin-17-β-D-glucoside $C_{32}H_{42}O_{14}$ 649.25018<br>Neoeriocitrin $C_{27}H_{32}O_{15}$ 597.18140<br>Isosakuranetin $C_{16}H_{14}O_5$ 287.09140<br>Alhagidin $C_{16}H_{14}O_5$ 287.09140<br>Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ 623.16176<br>diglucoside $C_{20}H_{24}O_9$ 407.13476<br>Marmesin $C_{20}H_{34}O_{20}$ 597.1877<br>Nodakenin $C_{14}H_{14}O_4$ 247.09649<br>Veronicastroside $C_{27}H_{30}O_{15}$ 595.16575<br>Sennoside B $C_{27}H_{30}O_{15}$ 595.16575<br>Sentrestroside $C_{27}H_{30}O_{15}$ 593.15119<br>Cassiachromone $C_{27}H_{30}O_{15}$ 593.15119<br>Cassiachromone $C_{27}H_{30}O_{15}$ 593.15119<br>Cassiachromone $C_{27}H_{30}O_{15}$ 593.15119<br>Cassiachromone $C_{27}H_{30}O_{14}$ 571.15628<br>Narirutin $C_{27}H_{30}O_{14}$ 571.15628<br>Acteoside $C_{27}H_{30}O_{14}$ 577.15628<br>Acteoside $C_{27}H_{20}O_{12}$ 479.11950<br>galloyl-glucoside $C_{27}H_{20}O_{12}$ 479.11950<br>galloyl-glucoside $C_{27}H_{20}O_{12}$ 479.11950<br>galloyl-glucoside $C_{21}H_{20}O_{13}$ 623.19814<br>1-Dihydro- <i>p</i> -coumaroyl-6-0- $C_{22}H_{24}O_{12}$ 479.11950<br>galloyl-glucoside   | Limonin-17-β-D-glucoside $C_{32}H_{42}O_{14}$ 649.25018<br>Neoeriocitrin $C_{27}H_{32}O_{15}$ 597.18140<br>Isosakuranetin $C_{16}H_{14}O_5$ 287.09140<br>Alhagidin $C_{34}H_{44}O_{20}$ 771.23532<br>Cinnamcyl-6-O-gallcyl- $C_{28}H_{32}O_{16}$ 623.16176<br>diglucoside $C_{14}H_{14}O_4$ 247.09649<br>Nodakenin $C_{27}H_{30}O_{15}$ 595.16575<br>Sennoside $B$ $C_{27}H_{30}O_{15}$ 595.16575<br>Sennoside $B$ $C_{27}H_{30}O_{15}$ 595.16575<br>Sennoside $B$ $C_{27}H_{30}O_{15}$ 593.15119<br>Cassiachronone $C_{27}H_{30}O_{15}$ 593.15119<br>Cassiachronone $C_{27}H_{30}O_{15}$ 593.15119<br>Cassiachronone $C_{27}H_{30}O_{14}$ 579.17083<br>Isorhoifolin $C_{27}H_{30}O_{14}$ 579.17083<br>Isorhoifolin $C_{27}H_{30}O_{14}$ 579.17083<br>Chrysophanol-1, 8-O-diglucoside $C_{27}H_{30}O_{14}$ 579.17083<br>Isorhoifolin $C_{27}H_{30}O_{14}$ 579.17083<br>Isorhoifolin $C_{27}H_{30}O_{14}$ 579.17083<br>Isorhoifolin $C_{27}H_{30}O_{14}$ 579.17083<br>Isorhoifolin $C_{27}H_{30}O_{14}$ 579.17083<br>Isorhoifolin $C_{27}H_{30}O_{14}$ 579.17083<br>Pattoside $C_{29}H_{36}O_{15}$ 623.19814<br>Prunin $C_{21}H_{22}O_{9}$ 419.13366<br>Natudaidai $C_{21}H_{22}O_{9}$ 419.13366   
   | Limonin-17-β-D-glucoside $C_{32}H_{42}O_{14}$ $649.25018$ Neoeriocitrin $C_{27}H_{32}O_{15}$ $597.18140$ Isosakuranetin $C_{27}H_{42}O_{25}$ $597.18140$ Isosakuranetin $C_{16}H_{14}O_{5}$ $597.16176$ Alhagidin $C_{34}H_{40}O_{20}$ $771.23532$ Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ Nodakenin $C_{20}H_{24}O_{9}$ $407.13476$ Nodakenin $C_{20}H_{34}O_{20}$ $861.18837$ Marmesin $C_{27}H_{30}O_{15}$ $595.16575$ Veronicastroside $C_{27}H_{30}O_{15}$ $595.16575$ Sennoside B $C_{27}H_{30}O_{15}$ $593.15119$ Veronicastroside $C_{27}H_{30}O_{14}$ $577.15628$ Narirutin $C_{27}H_{20}O_{14}$ $577.15628$ Acteoside $C_{27}H_{20}O_{14}$ $579.10623$ Sorhoifolin $C_{21}H_{20}O_{12}$ $57.10623$ Sorhoifolin $C_{27}H_{20}O_{14}$ $571.1050$ Sorhoifolin $C_{21}H_{20}O_{12}$ $479.11950$ Sorhoifolin $C_{21}H_{20}O_{12}$ $57.12877$ Nateoside $C_{21}H_{20}O_{14}$ $57.12877$ Nateoside $C_{21}H_{$  | Limonin-17-b-D-glucoside $C_{32}H_{42}O_{14}$ $649.25018$ Neoericcitrin $C_{27}H_{32}O_{15}$ $597.18140$ Isosakuranetin $C_{16}H_{14}O_5$ $597.18140$ Isosakuranetin $C_{16}H_{44}O_5$ $597.18140$ Isosakuranetin $C_{16}H_{44}O_5$ $577.123532$ Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ Marmesin $C_{20}H_{24}O_9$ $407.13476$ Nodakenin $C_{20}H_{30}O_{15}$ $595.16575$ Nodakenin $C_{27}H_{30}O_{15}$ $595.16575$ Sennoside B $C_{27}H_{30}O_{13}$ $595.16575$ Sennoside B $C_{27}H_{30}O_{13}$ $591.13837$ Emodin-O-di-glucoside $C_{27}H_{30}O_{14}$ $591.13648$ Narirutin $C_{27}H_{30}O_{14}$ $591.16575$ Sennoside B $C_{27}H_{30}O_{14}$ $591.16575$ Cassiachronone $C_{27}H_{30}O_{14}$ $591.16575$ Cassiachronone $C_{27}H_{30}O_{14}$ $571.13648$ Narirutin $C_{27}H_{30}O_{14}$ $571.13648$ Sennoside B $C_{27}H_{30}O_{14}$ $571.13648$ Sennoside B $C_{27}H_{30}O_{14}$ $571.13648$ Marindro-p-coumaroyl-6-O- $C_{21}H_{22}O_{10}$ $479.11950$ Prunin $C_{21}H_{22}O_{10}$ $479.11950$ Prunin $C_{21}H_{22}O_{10}$ $479.11950$ Prunin $C_{21}H_{22}O_{10}$ $479.13366$ Natudaidai $C_{21}H_{22}O_{10}$ $479.13366$ Natudaidai $C_{21}H_{22}O_{10}$ $479.13366$ Natudaidai $C_{21}H_{22}O_{10}$ $479.$  | Limonin-17-β-D-glucoside $C_{22}H_{32}O_{15}$ 649.25018<br>Neoeriocitrin $C_{27}H_{32}O_{15}$ 597.18140<br>Isosakuranetin $C_{16}H_{14}O_5$ 287.09140<br>Cinhamoyl-6-O-galloyl- $C_{26}H_{34}O_{20}$ 771.23532<br>Cinnamoyl-6-O-galloyl- $C_{20}H_{24}O_9$ 407.13476<br>Nodakenin $C_{20}H_{34}O_{20}$ 623.16175<br>Sentoside $C_{27}H_{30}O_{15}$ 595.16575<br>Sentoside $C_{27}H_{30}O_{15}$ 595.16575<br>Sentoside $C_{27}H_{30}O_{15}$ 593.15119<br>Cashal-0-di-glucoside $C_{27}H_{30}O_{15}$ 593.15119<br>Casiachromone $C_{27}H_{30}O_{15}$ 593.15119<br>Casiachromone $C_{27}H_{30}O_{15}$ 593.15119<br>Casiachromone $C_{27}H_{30}O_{15}$ 593.15119<br>Casiachromone $C_{27}H_{30}O_{15}$ 593.15119<br>Casiachromone $C_{27}H_{30}O_{15}$ 593.15119<br>Casiachromone $C_{27}H_{30}O_{14}$ 579.17083<br>Isorhoifolin $C_{27}H_{30}O_{14}$ 571.16528<br>Acteoside $C_{27}H_{30}O_{14}$ 571.1950<br>galloyl-glucoside $C_{21}H_{22}O_{10}$ 435.12857<br>Natrutin $C_{21}H_{22}O_{10}$ 435.12857<br>Natsudaidai $C_{21}H_{22}O_{10}$ 885.118648<br>Sennoside A $C_{21}H_{30}O_{15}$ 531.19814<br>Isoacteoside $C_{21}H_{32}O_{15}$ 531.19814<br>Sennoside A $C_{20}H_{36}O_{15}$ 623.19814   | $ \begin{array}{llllllllllllllllllllllllllllllllllll$   
  | $\begin{array}{llllllllllllllllllllllllllllllllllll$   | min-17- $\beta$ -D-glucoside $C_{32}H_{42}O_{15}$ $649.25018$ riocitrin $C_{27}H_{32}O_{15}$ $597.18140$ kuranetin $C_{16}H_{14}O_5$ $597.18140$ gidin $C_{34}H_{44}O_{20}$ $771.23532$ amoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ coside $C_{20}H_{34}O_3$ $597.1876$ kenin $C_{20}H_{30}O_{15}$ $597.1675$ amoyl-6-O-galloyl- $C_{20}H_{30}O_3$ $597.15179$ kenin $C_{27}H_{30}O_{15}$ $595.16575$ nesin $C_{27}H_{30}O_{13}$ $597.13837$ nicastroside $C_{27}H_{30}O_{13}$ $597.15119$ achromone $C_{27}H_{30}O_{13}$ $591.13648$ nicastroside $C_{27}H_{30}O_{13}$ $591.13648$ nin-0-di-glucoside $C_{27}H_{30}O_{13}$ $571.7083$ solpanol-1,8-O-di-glucoside $C_{27}H_{30}O_{13}$ $571.13648$ offolin $C_{27}H_{30}O_{13}$ $571.13648$ offolin $C_{27}H_{30}O_{13}$ $571.13648$ offolin $C_{21}H_{22}O_{10}$ $479.11950$ $P_1$ -glucoside $C_{21}H_{22}O_{10}$ $479.11950$ $P_1$ -glucoside $C_{27}H_{30}O_{13}$ $571.13846$ offolin $C_{21}H_{22}O_{10}$ $623.19814$ in $C_{21}H_{22}O_{10}$ $479.11950$ $P_1$ -glucoside $C_{21}H_{22}O_{10}$ $479.11950$ $P_1$ -glucoside $C_{21}H_{22}O_{10}$ $479.11950$ $P_1$ -glucoside $C_{21}H_{22}O_{10}$ $479.11950$ $P_2$ -glucoside $C_{21}H_{22}O_{10}$ $479.11950$ <td< td=""><td><math display="block">\begin{array}{llllllllllllllllllllllllllllllllllll</math></td></td<>  | $\begin{array}{llllllllllllllllllllllllllllllllllll$   |
| $\begin{bmatrix} C_2/H_32U_{15} & C_2/H_32U_{15} & C_2/H_4U \\ \hline C_2/H_{11}C_{12}C_{12} & C_{12}C_{12} & C_{12}C_{12} \\ \hline C_{11}C_{12}C_{12} & C_{12}C_{12} & C_{12}C_{12} \\ \hline C_{11}C_{12}C_{12} & C_{12}C_{12} \\ \hline C_{12}C_{12}C_{12} & C_{12}C_{12} \\ \hline C_{12}C_{12} & C_{12}C_{12} \\ \hline C_{12$ | Neoetlocium C <sub>27</sub> H <sub>32</sub> O <sub>15</sub> 397.18140<br>Isosakuranetin C <sub>16</sub> H <sub>14</sub> O <sub>5</sub> 287.09140<br>Alhagidin C <sub>34</sub> H <sub>40</sub> O <sub>50</sub> 771.23532  | Necetocium $C_{27}H_{32}O_{15}$ $397.18140$ Isosakuranetin $C_{16}H_{14}O_5$ $287.09140$ Alhagidin $C_{34}H_{44}O_{20}$ $771.23532$ Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$   | Necenocium $C_{27}H_{32}O_{15}$ $397.16140$ Isosakuranetin $C_{16}H_{14}O_5$ $287.09140$ Alhagidin $C_{34}H_{44}O_{20}$ $771.23532$ Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ dipucoside $C_{28}H_{32}O_{16}$ $623.16176$   | Necentration $C_{27}H_{32}O_{15}$ $397.108140$ Isosakuranetin $C_{16}H_{14}O_5$ $287.09140$ Isosakuranetin $C_{34}H_{44}O_{20}$ $771.23532$ Alhagidin $C_{28}H_{32}O_{16}$ $623.16176$ Giglucoside $C_{20}H_{24}O_9$ $407.13476$ Marmeein $C_{20}H_{24}O_9$ $407.13476$  
   | Necentration $C_{27}H_{32}O_{15}$ $397.103440$ Isosakuranetin $C_{16}H_{14}O_{5}$ $287.09140$ Isosakuranetin $C_{34}H_{44}O_{20}$ $771.23532$ Alhagidin $C_{34}H_{44}O_{20}$ $771.23532$ Ginnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ diglucoside $C_{20}H_{24}O_{2}$ $407.13476$ Nadakenin $C_{14}H_{14}O_{4}$ $247.09649$ Marmesin $C_{2.0}H_{2.0}O_{2.5}$ $595.16575$   | Necentration $C_{27}H_{32}O_{15}$ $397.10340$ Isosakuranetin $C_{16}H_{14}O_{5}$ $287.09140$ Alhagidin $C_{16}H_{14}O_{20}$ $771.23532$ Almagudin $C_{28}H_{32}O_{16}$ $623.16176$ diglucoside $C_{20}H_{24}O_{9}$ $407.13476$ Nodakenin $C_{20}H_{24}O_{9}$ $407.13476$ Marmesin $C_{20}H_{24}O_{9}$ $407.13476$ Veronicastroside $C_{27}H_{30}O_{15}$ $595.16575$ Sennoside $C_{42}H_{38}O_{20}$ $861.18837$  | Necentocutul $C_27H_{32}O_{15}$ $397.108140$ Isosakuranetin $C_{16}H_{14}O_{20}$ $237.09140$ Isosakuranetin $C_{14}H_{14}O_{20}$ $771.23532$ Alhagidin $C_{28}H_{32}O_{16}$ $623.16176$ diglucoside $C_{20}H_{24}O_{9}$ $407.13476$ Nodakenin $C_{20}H_{24}O_{9}$ $407.13476$ Marmesin $C_{20}H_{24}O_{9}$ $247.09649$ Veronicastroside
$C_{27}H_{30}O_{15}$ $595.16575$ Sennoside B $C_{27}H_{30}O_{15}$ $591.16837$ Emodin-O-diglucoside $C_{27}H_{30}O_{15}$ $593.15119$  | Necentocutur $C_27H_{32}O_{15}$ $397.108140$ Isosakuranetin $C_{16}H_{14}O_5$ $287.09140$ Isosakuranetin $C_{16}H_{14}O_5$ $287.09140$ Alhagidin $C_{34}H_{44}O_{20}$ $771.33532$ Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ diglucoside $C_{20}H_{34}O_8$ $407.13476$ Nodakenin $C_{20}H_{34}O_8$ $407.13476$ Marmesin $C_{20}H_{34}O_8$ $617.13476$ Veronicastroside $C_{27}H_{30}O_{15}$ $595.16575$ Sennoside B $C_{27}H_{30}O_{15}$ $593.15119$ Landin-O-di-glucoside $C_{13}H_{12}O_4$ $231.0628$ Cash honone $C_{14}H_{12}O_4$ $231.0628$  | Recentocium $C_27H_{32}O_{15}$ $397.108140$ Isosakuranetin $C_{16}H_{14}O_5$ $287.09140$ Isosakuranetin $C_{16}H_{14}O_5$ $287.09140$ Alhagidin $C_{34}H_{40}O_{20}$ $771.23532$ Cinamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ diglucoside $C_{20}H_{24}O_9$ $407.13476$ Nadakenin $C_{14}H_{14}O_4$ $247.09649$ Veronicastroside $C_{27}H_{30}O_{15}$ $595.16575$ Sennoside $C_{27}H_{30}O_{15}$ $593.15119$ Veronicastroside $C_{27}H_{30}O_{15}$ $593.15119$ Cassiachronone $C_{27}H_{30}O_{14}$ $531.106628$ Narirutin $C_{27}H_{30}O_{14}$ $531.106628$ Narrutin $C_{27}H_{30}O_{14}$ $579.17083$ Isorboifolin $C_{37}H_{30}O_{14}$ $579.17083$  | Recentocutul $C_2 F H_{32} O_{15}$ $397.108140$ Isosakuranetin $C_{16} H_{14} O_{25}$ $237.09140$ Isosakuranetin $C_{16} H_{14} O_{26}$ $237.09140$ Alhagidin $C_{38} H_{32} O_{16}$ $523.16176$ Ginnamoyl-6-O-galloyl- $C_{28} H_{32} O_{16}$ $623.16176$ Nodenin $C_{20} H_{30} O_{15}$ $623.16176$ Nodesin $C_{20} H_{30} O_{15}$ $623.16176$ Marmesin $C_{14} H_{14} O_{4}$ $247.09649$ Veronicastroside $C_{27} H_{30} O_{15}$ $595.16575$ Sennoside B $C_{27} H_{30} O_{15}$ $593.15119$ Cassiachromone $C_{13} H_{12} O_{4}$ $231.06628$ Narirutin $C_{27} H_{30} O_{14}$ $581.18648$ Isorhoifolin $C_{27} H_{30} O_{14}$ $571.1083$ Chrysophanol-1, 8-0-di-glucoside $C_{27} H_{30} O_{14}$ $577.17628$   
   | Recentocutul $C_2 F H_{32} O_{15}$ $397.108140$ Isoaskuranetin $C_{16} H_{14} O_{20}$ $237.09140$ Isoaskuranetin $C_{16} H_{14} O_{20}$ $237.09140$ Isoaskuranetin $C_{26} H_{32} O_{16}$ $623.16176$ diglucoside $C_{26} H_{32} O_{16}$ $623.16176$ Nodenin $C_{20} H_{30} O_{15}$ $623.16176$ Marmesin $C_{20} H_{30} O_{15}$ $595.16575$ Semoside $C_{27} H_{30} O_{15}$ $595.16575$ Semoside $C_{27} H_{30} O_{15}$ $593.15119$ Veronicastroside $C_{27} H_{30} O_{15}$ $593.15119$ Cassiachromone $C_{13} H_{12} O_{4}$ $231.06628$ Narirutin $C_{27} H_{30} O_{14}$ $581.18648$ Isorhoifolin $C_{27} H_{30} O_{14}$ $579.17083$ Chrysophanol-1, & O-di-glucoside $C_{27} H_{30} O_{14}$ $577.15628$ Acteoside $C_{27} H_{30} O_{15}$ $523.19814$  
  | recentocutut $C_{27}H_{32}O_{15}$ $397.103140$ Isoaskuranetin $C_{16}H_{14}O_{5}$ $287.09140$ Isoaskuranetin $C_{16}H_{14}O_{20}$ $771.23532$ Ginmamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ Ginmamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ Matmesin $C_{20}H_{24}O_{3}$ $407.13476$ Nodekenin $C_{20}H_{30}O_{15}$ $595.16575$ Marmesin $C_{27}H_{30}O_{15}$ $591.1837$ Veronicastroside $C_{27}H_{30}O_{15}$ $593.15119$ Veronicastroside $C_{27}H_{30}O_{14}$ $591.18837$ Emodin-O-diglucoside $C_{27}H_{30}O_{14}$ $591.18648$ Narirutin $C_{27}H_{30}O_{14}$ $591.10628$ Isorholifolin $C_{27}H_{30}O_{14}$ $577.15628$ Acteoside $C_{20}H_{36}O_{15}$ $623.10814$ I-Dihydro-p-coumaroyl-6-O- $C_{22}H_{30}O_{12}$ $479.11950$  
   | Necentocutul $C_{27}H_{32}O_{15}$ $397.108140$ Isosakuranetin $C_{16}H_{14}O_{5}$ $287.09140$ Isosakuranetin $C_{16}H_{14}O_{20}$ $771.23532$ Ginamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ Ginamoyl-6-O-galloyl- $C_{20}H_{24}O_{20}$ $771.23532$ Kondsenin $C_{20}H_{30}O_{15}$ $595.16575$ Natmesin $C_{22}H_{30}O_{15}$ $595.16575$ Veronicastroside $C_{27}H_{30}O_{15}$ $591.18837$ Emodin-O-diglucoside $C_{27}H_{30}O_{14}$ $591.106228$ Narirutin $C_{27}H_{30}O_{14}$ $591.106228$ Isorhoifolin $C_{27}H_{30}O_{14}$ $571.106228$ Isorhoifolin $C_{27}H_{30}O_{14}$ $577.15628$ Acteoside $C_{27}H_{30}O_{14}$ $577.15628$ Acteoside $C_{22}H_{30}O_{14}$ $577.15628$ Acteoside $C_{22}H_{30}O_{13}$ $579.10814$ Prunin $C_{21}H_{20}O_{10}$ $479.11950$  | Necentocutul $C_2 H_{42} O_5$ $397.108140$ Isosakuranetin $C_{16} H_{44} O_5$ $397.108140$ Isosakuranetin $C_{16} H_{44} O_5$ $287.09140$ Alhagidin $C_{26} H_{42} O_5$ $771.23532$ Cinnamoyl-6-O-galloyl- $C_{28} H_{32} O_{16}$ $623.16176$ Nodakenin $C_{20} H_{40} O_4$ $247.09649$ Natmesin $C_{14} H_{40} O_4$ $247.09649$ Veronicastroside $C_{27} H_{30} O_{15}$ $595.16575$ Semoside B $C_{27} H_{30} O_{15}$ $593.15119$ Veronicastroside $C_{27} H_{30} O_{14}$ $581.18648$ Semoside B $C_{27} H_{30} O_{14}$ $581.18648$ Isorholifolin $C_{27} H_{30} O_{14}$ $571.10628$ Narirutin $C_{27} H_{30} O_{14}$ $577.15628$ Acteoside $C_{21} H_{20} O_{10}$ $571.1083$ Chrysophanol-1, 8-0-di-glucoside $C_{21} H_{20} O_{12}$ $577.15628$ Acteoside $C_{21} H_{20} O_{12}$ $577.15628$ Acteoside $C_{21} H_{20} O_{12}$ $577.13857$ Prunin   | Necentocutul $C_{27}H_{32}O_{15}$ $397.108140$ Isosakuranetin $C_{16}H_{14}O_{5}$ $287.109140$ Isosakuranetin $C_{16}H_{14}O_{20}$ $771.23532$ Ginmamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ Ginmamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ Nodekenin $C_{20}H_{30}O_{15}$ $595.16575$ Natmesin $C_{27}H_{30}O_{15}$ $595.16575$ Veronicastroside $C_{27}H_{30}O_{15}$ $595.16575$ Semoside B $C_{27}H_{30}O_{15}$ $595.16575$ Semoside B $C_{27}H_{30}O_{15}$ $593.15119$ Veronicastroside $C_{27}H_{30}O_{14}$ $581.18648$ Narirutin $C_{27}H_{30}O_{14}$ $581.106628$ Narirutin $C_{27}H_{30}O_{14}$ $577.15628$ Acteoside $C_{27}H_{30}O_{14}$ $577.15628$ Acteoside $C_{27}H_{30}O_{14}$ $577.15628$ Acteoside
$C_{27}H_{30}O_{14}$ $577.15628$ Acteoside $C_{21}H_{22}O_{10}$ $479.11950$ galloyl-glucoside $C_{21}H_{$   | Necentocutul $C_27H_{32}O_{15}$ $397.103140$ Isosakuranetin $C_{16}H_{14}O_5$ $237.09140$ Isosakuranetin $C_{16}H_{14}O_5$ $237.09140$ Ginnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ Giplucoside $C_{20}H_{23}O_9$ $407.13476$ Natmesin $C_{20}H_{30}O_{15}$ $597.10549$ Narmesin $C_{20}H_{30}O_{15}$ $595.16575$ Senoside B $C_{27}H_{30}O_{15}$ $593.15119$ Veronicastroside $C_{27}H_{30}O_{15}$ $591.18648$ Senoside B $C_{27}H_{30}O_{14}$ $531.1619$ Varintin $C_{27}H_{30}O_{14}$ $531.18648$ Isonoside B $C_{27}H_{30}O_{14}$ $531.16575$ Senoside B $C_{27}H_{30}O_{14}$ $531.16575$ Senoside B $C_{27}H_{30}O_{14}$ $531.106628$ Narirutin $C_{27}H_{30}O_{14}$ $531.106628$ Narirutin $C_{27}H_{30}O_{14}$ $531.106628$ Acteoside $C_{27}H_{30}O_{14}$ $531.10628$ Acteoside $C_{22}H_{20}O_{14}$ $577.15628$ Acteoside $C_{22}H_{20}O_{14}$ $577.15628$ Prunin $C_{22}H_{20}O_{14}$ $577.15628$ Prunin $C_{21}H_{22}O_{10}$ $479.11950$ Prunin $C_{21}H_{22}O_{10}$ $419.13366$ Natsudaidai $C_{21}H_{22}O_{10}$ $885.18486$ Sennoside A $C_{22}H_{38}O_{20}$ $581.1868$ Sennoside A $C_{22}H_{38}O_{20}$ $621H_{22}O_{10}$ Punin $C_{21}H_{22}O_{10}$ $885.18486$ Sennoside A $C_{2$   | Necentocium $C_{27}H_{32}O_{15}$ $397.108140$ Isosakuranetin $C_{16}H_{40}O_5$ $397.108140$ Isosakuranetin $C_{16}H_{40}O_5$ $287.09140$ Ginamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ Ginamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ Marmesin $C_{20}H_{24}O_6$ $407.13476$ Nodkenin $C_{20}H_{30}O_{15}$ $595.16575$ Natmesin $C_{27}H_{30}O_{15}$ $595.16575$ Veronicastroside $C_{27}H_{30}O_{15}$ $593.15119$ Veronicastroside $C_{27}H_{30}O_{14}$ $591.18648$ Narirutin $C_{27}H_{30}O_{14}$ $571.16628$ Narirutin $C_{27}H_{30}O_{14}$ $577.15628$ Acteoside $C_{27}H_{30}O_{14}$ $577.15628$ Prunin $C_{27}H_{30}O_{14}$ $577.15628$ Prunin $C_{21}H_{22}O_{10}$ $479.11950$ Prunin $C_{21}H_{22}O_{16}$ $479.11950$ Prunin $C_{21}$  | corrocutum $C_{27}H_{32}O_{15}$ $397.108140$ bagidinnamoyl-6-O-galloyl- $C_{24}H_{40}O_{20}$ $237.09140$ bagidin $C_{14}H_{40}O_{20}$ $771.23532$ glucoside $C_{26}H_{32}O_{16}$ $623.16176$ glucoside $C_{20}H_{24}O_{9}$ $407.13476$ glucoside $C_{20}H_{30}O_{15}$ $595.16575$ monside B $C_{21}H_{14}O_{4}$ $247.09649$ romicastroside $C_{27}H_{30}O_{15}$ $593.15119$ nonicastroside $C_{27}H_{30}O_{15}$ $593.15119$ norside B $C_{27}H_{30}O_{15}$ $593.15119$ sisiachromone $C_{27}H_{30}O_{14}$ $511.18648$ nrintin $C_{27}H_{30}O_{14}$ $511.18648$ nrintin $C_{27}H_{30}O_{14}$ $511.19628$ urintin $C_{27}H_{30}O_{14}$ $511.19628$ teoside $C_{27}H_{30}O_{14}$ $511.18648$ nofiolin $C_{27}H_{30}O_{14}$ $577.15628$ teoside $C_{27}H_{30}O_{13}$ $587.18486$ unin $C_{21}H_{22}O_{10}$ $479.11950$ lloyl-glucoside $C_{21}H_{22}O_{10}$ $885.18486$ noside A $C_{22}H_{36}O_{12}$ $623.19814$ acteoside $C_{29}H_{36}O_{12}$ $623.19814$ acteoside $C_{29}H_{20}O_{12$  | Anocuum $C_{27}H_{32}O_{15}$ $397.108140$ sidin $C_{16}H_{14}O_{5}$ $297.108140$ gidin $C_{16}H_{14}O_{20}$ $771.23532$ amoyl-6-Orgalloyl- $C_{28}H_{32}O_{16}$ $623.16176$ coside $C_{20}H_{24}O_{9}$ $407.13476$ nesin $C_{20}H_{30}O_{15}$ $623.16176$ nesin $C_{20}H_{30}O_{15}$ $617.13476$ nesin
$C_{20}H_{30}O_{15}$ $623.16176$ nesin $C_{20}H_{30}O_{15}$ $595.16575$ noiside B $C_{27}H_{30}O_{13}$ $591.18648$ noiside B $C_{27}H_{30}O_{14}$ $531.5119$ nicastroside $C_{27}H_{30}O_{14}$ $531.1648$ noifolin $C_{27}H_{30}O_{14}$ $531.18648$ noifolin $C_{27}H_{30}O_{14}$ $531.19814$ sophanol-1,8-0-di-glucoside $C_{22}H_{20}O_{10}$ $479.11950$ yidro-p-coumaroyl-6-0- $C_{22}H_{20}O_{10}$ $479.11950$ yidro-p-coumaroyl-6-0- $C_{22}H_{20}O_{10}$ $479.11950$ oifolin $C_{22}H_{20}O_{10}$ $885.18486$ ndaidai $C_{22}H_{30}O_{14}$ $581.18648$ oside A $C_{22}H_{30}O_{10}$ $885.18486$ noiside A $C_{22}H_{30}O_{10}$ $885.18486$ noiside A $C_{22}H_{30}O_{10}$ $885.18486$ noiside A $C_{22}H_{30}O_{10}$ $875.10814$ side $C_{21}H_{20}O_{10}$ $885.18486$ noiside A $C_{22}H_{30}O_{10}$ $875.10814$ side $C_{21}H_{20}O_{10}$ $875.108140$ side $C_{21}H_{20}O_{10}$ $87$   | Inocutum $C_{27}H_{32}O_{15}$ $397.130140$ Kurranetin $C_{16}H_{14}O_5$ $287.09140$ gidin $C_{26}H_{32}O_{16}$ $623.16176$ amoyl-6-O-galloyl- $C_{20}H_{24}O_6$ $623.16176$ anoyl-6-0-galloyl- $C_{20}H_{30}O_{15}$ $247.03440$ kenin $C_{20}H_{30}O_{15}$ $247.03649$ incastroside $C_{20}H_{30}O_{15}$ $595.16575$ acsin $C_{21}H_{30}O_{15}$ $593.15119$ acsincate $C_{21}H_{30}O_{14}$ $591.18837$ solde $C_{27}H_{30}O_{14}$ $591.18648$ achromone $C_{27}H_{30}O_{14}$ $579.17083$ achromone $C_{27}H_{30}O_{14}$ $579.17083$ achromone $C_{27}H_{30}O_{14}$ $577.15628$ achromone $C_{27}H_{30}O_{14}$ $577.15628$ sophanol-1,8-O-diglucoside $C_{27}H_{30}O_{14}$ $577.15628$ side $C_{27}H_{30}O_{14}$ $577.15628$ side $C_{22}H_{22}O_{10}$ $479.11950$ vheglucoside $C_{22}H_{20}O_{13}$ $581.18648$ side $C_{22}H_{20}O_{14}$ $577.15628$ side $C_{22}H_{20}O_{14}$ $577.15628$ side $C_{22}H_{20}O_{13}$ $479.11950$ vheglucoside $C_{22}H_{20}O_{13}$ $691.13864$ side $C_{22}H_{20}O_{13}$ $691.1364$ side $C_{22}H_{20}O_{13}$ $691.1364$ side $C_{22}H_{20}O_{13}$ $691.1964$ side $C_{22}H_{20}O_{13}$ $691.1964$ side $C_{22}H_{20}O_{13}$ $691.1964$ side  | nocurin $C_{27}H_{32}O_{16}$ $597.18140$ idin         moyl-6-O-galloyl- $C_{34}H_{40}O_{20}$ $771.3373$ imoyl-6-O-galloyl- $C_{32}H_{32}O_{16}$ $623.16176$ $537.16176$ isside $C_{20}H_{32}O_{16}$ $623.16176$ $537.16176$ isside $C_{20}H_{32}O_{15}$ $247.09649$ $617.13376$ iestin $C_{24}H_{30}O_{15}$ $595.16575$ $595.16575$ side $C_{27}H_{30}O_{15}$ $593.15119$ $61.18837$ side B $C_{27}H_{30}O_{15}$ $593.15119$ $623.19814$ side B $C_{27}H_{30}O_{14}$ $511.18648$ $511.18648$ ifolin $C_{27}H_{30}O_{14}$ $511.19620$ $623.19814$ ophanol-1, 8-0-diglucoside $C_{27}H_{30}O_{14}$ $511.19620$ $621.10837$ ophanol-1, 8-0-diglucoside $C_{27}H_{30}O_{13}$ $511.19610$ $623.19814$ offolin $C_{27}H_{30}O_{13}$ $623.19814$ $623.19814$ offolin $C_{21}H_{22}O_{10}$ $477.15628$ $621.18648$ offolin $C_{21}H_{22}O_{10}$  |
|  | Alhagidin $C_{34}H_{A0}O_{30} = 771.23532$   | Alhagidin $C_{34}H_{44}O_{20}$ 771.23532<br>Cinnamoyl-6-0-galloyl- $C_{28}H_{32}O_{16}$ 623.16176   | Alhagidin $C_{28}H_{44}O_{20}$ 771.23532<br>Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ 623.16176<br>diglucoside   
  | Alhagidin $C_{36}H_{44}O_{20}$ 771.23532<br>Alhagidin $C_{34}H_{40}O_{16}$ 771.23532<br>Cinnamoyl-6- $O$ -galloyl- $C_{28}H_{32}O_{16}$ 623.16176<br>diglucoside $C_{20}H_{24}O_{9}$ 407.13476<br>Nodakenin $C_{20}H_{24}O_{9}$ 407.13476  | Document $C_{34}H_{40}C_{20}$ $771.23532$ Alhagidin $C_{34}H_{40}C_{20}$ $771.23532$ Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ digueoside $C_{20}H_{24}O_{9}$ $407.13476$ Nodakenin $C_{14}H_{14}O_{4}$ $247.09649$ Marmesin $C_{14}H_{14}O_{4}$ $257.16575$  | Alhagidin         Contrates         Contrates           Alhagidin $C_{34}H_{44}O_{20}$ 771.23532           Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ 623.16176           diglucoside $C_{20}H_{24}O_{9}$ 407.13476           Nodakenin $C_{20}H_{14}O_4$ 247.09649           Marmesin $C_{27}H_{30}O_{15}$ 595.16575           Veronicastroside $C_{27}H_{38}O_{20}$ 861.18837  
   | Document $C_{16}H_{4}O_{20}$ $771.23532$ Alhagidin $C_{34}H_{4}O_{20}$ $771.23532$ Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ diglucoside $C_{20}H_{24}O_{9}$ $407.13476$ Nodakenin $C_{20}H_{14}O_{4}$ $247.09649$ Marmesin $C_{27}H_{30}O_{15}$ $595.16575$ Veronicastroside $C_{27}H_{30}O_{15}$ $595.16575$ Sennoside $C_{27}H_{30}O_{15}$ $593.15119$ Emodin-O-di-glucoside $C_{27}H_{30}O_{15}$ $593.15119$   | Alhagidin $C_{16}H_{4}O_{20}$ $771.23532$ Alhagidin $C_{34}H_{4}O_{20}$ $771.23532$ Cinnamoyl-6-O-galloyl- $C_{28}H_{32}O_{16}$ $623.16176$ diglucoside $C_{20}H_{24}O_{9}$ $407.13476$ Marmesin $C_{20}H_{14}O_{4}$ $247.09649$ Veronicastroside $C_{27}H_{30}O_{15}$ $595.16575$ Sennoside B $C_{27}H_{30}O_{15}$ $593.15119$ Emodin-O-di-glucoside $C_{27}H_{30}O_{15}$ $593.15119$ Casider C $C_{27}H_{30}O_{15}$ $593.15119$ Casider C $C_{27}H_{20}O_{15}$ $593.15119$ Casider C $C_{27}H_{20}O_{15}$ $593.15119$ Casider C $C_{27}H_{20}O_{15}$ $593.15119$   | Instantation         Construction  | AlhagidinCash1,405771.23532Alhagidin $C_{34}H_{44}O_{20}$ 771.23532Cinnamoyl-6- $O$ -galloyl- $C_{20}H_{24}O_{9}$ 623.16176Nodakenin $C_{20}H_{24}O_{9}$ 407.13476Narmesin $C_{20}H_{14}O_{4}$ 247.09649Narmesin $C_{27}H_{30}O_{15}$ 595.16575Sennoside B $C_{27}H_{30}O_{15}$ 593.15119Cassiachronone $C_{13}H_{12}O_{4}$ 231.06628Narirutin $C_{27}H_{30}O_{14}$ 581.18648Isorhoifolin $C_{27}H_{30}O_{14}$ 581.16628Narirutin $C_{27}H_{30}O_{14}$ 571.15628Chrysophanol-1,8-0-di-glucoside $C_{27}H_{30}O_{14}$ 577.15628   
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  | $\begin{array}{llllllllllllllllllllllllllllllllllll$   | AlhagidinConstructionAlhagidin $C_{34}H_{44}O_{20}$ $771.23532$ Cinnamoyl-6-O-galloyl- $C_{26}H_{32}O_{16}$ $623.16176$ Nodakenin $C_{20}H_{24}O_{9}$ $407.13476$ Nodakenin $C_{20}H_{24}O_{9}$ $407.13476$ Marmesin $C_{20}H_{34}O_{15}$ $595.16575$ Sennoside $C_{27}H_{30}O_{15}$ $595.16575$ Sennoside B $C_{27}H_{30}O_{15}$ $593.15119$ Cassiachronnoe $C_{27}H_{30}O_{14}$ $571.16628$ Narirutin $C_{27}H_{30}O_{14}$ $571.16628$ Narirutin $C_{27}H_{30}O_{14}$ $571.16628$ Sennoside $C_{27}H_{30}O_{14}$ $571.16628$ Narirutin $C_{27}H_{30}O_{14}$ $571.16628$ Sennolifolin $C_{27}H_{30}O_{14}$ $571.16628$ Acteoside $C_{27}H_{30}O_{14}$ $571.16628$ Acteoside $C_{27}H_{30}O_{14}$ $577.15628$ Acteoside $C_{27}H_{30}O_{13}$ $571.16628$ Acteoside $C_{27}H_{20}O_{10}$ $479.11950$ galloyl-glucoside $C_{21}H_{22}O_{9}$ $419.13366$ Natsudaidai $C_{21}H_{22}O_{9}$ $419.13366$   | Alhagidin $C_{161}A_{12}$ $C_{161}A_{12}$ $C_{161}A_{14}A_{02}$ $771.23532$ Ginnamoyl-6-O-galloyl- $C_{26}H_{34}O_{0}$ $771.23532$ $771.23532$ Nodakenin $C_{20}H_{24}O_{3}$ $407.13476$ Natmesin $C_{20}H_{34}O_{1}$ $571.13476$ Marmesin $C_{14}H_{14}O_{4}$ $247.09649$ Veronicastroside $C_{27}H_{38}O_{15}$ $595.16575$ Sennoside B $C_{27}H_{30}O_{15}$ $593.15119$ Cassiachronone $C_{27}H_{30}O_{14}$ $591.18648$ Narriutin $C_{27}H_{30}O_{14}$ $571.16628$ Narriutin $C_{27}H_{30}O_{14}$ $571.16628$ Narriutin $C_{27}H_{30}O_{14}$ $571.1083$ Chrysophanol-1, 8-O-di-glucoside $C_{27}H_{30}O_{14}$ $571.1083$ Chrysophanol-1, 8-O-di-glucoside $C_{27}H_{30}O_{14}$ $571.1083$ Acteoside $C_{27}H_{30}O_{14}$ $571.1083$ Rottoside $C_{27}H_{30}O_{14}$ $571.1083$ Rottoside $C_{27}H_{24}O_{12}$ $479.11950$ galloyl-glucoside $C_{21}H_{22}O_{9}$ $419.113366$ Natsudaidai $C_{21}H_{22}O_{9}$ $419.113366$ Natrudaidai $C_{27}H_{32}O_{14}$ $581.18648$   
  | AlhagidinCash14,020771.23532Alhagidin $C_{34}H_{4}O_{20}$ 771.23532Cinnamoyl-6-Ogalloyl- $C_{20}H_{32}O_{16}$ 623.16176Nodakenin $C_{20}H_{30}O_{15}$ 623.16176Nodakenin $C_{20}H_{30}O_{15}$ 595.16575Marmesin $C_{21}H_{14}O_{4}$ 247.09649Veronicastroside $C_{27}H_{30}O_{15}$ 595.15575Sennoside B $C_{27}H_{30}O_{15}$ 595.15675Sennoside B $C_{27}H_{30}O_{15}$ 591.196628Narirutin $C_{27}H_{30}O_{14}$ 591.18648Isorhorifolin $C_{27}H_{30}O_{14}$ 591.196628Narirutin $C_{27}H_{30}O_{14}$ 571.15628Antroside $C_{27}H_{30}O_{14}$ 571.1960Ratirutin $C_{27}H_{30}O_{14}$ 571.1960Ratirutin $C_{27}H_{30}O_{14}$ 571.1960Ratirutin $C_{27}H_{30}O_{14}$ 571.1960Ratirutin $C_{21}H_{20}O_{14}$ 571.1960Ratirutin $C_{21}H_{20}O_{13}$ 571.1960Ratirutin $C_{21}H_{20}O_{14}$ 571.1960Ratuoside $C_{21}H_{20}O_{13}$ 571.1960Prunin $C_{21}H_{20}O_{10}$ 581.18648Sennoside A $C_{42}H_{38}O_{20}$ 885.18486  | Indextuation $C_{34}H_{44}O_{20}$ $771.23532$ Alhagidin $C_{34}H_{44}O_{20}$ $771.23532$ Cinnamoyl-6-O-galloyl- $C_{20}H_{24}O_{9}$ $407.13476$ Nodakenin $C_{20}H_{24}O_{9}$ $407.13476$ Natmesin $C_{14}H_{14}O_{4}$ $247.09649$ Veronicastroside $C_{27}H_{30}O_{15}$ $593.15119$ Sennoside B $C_{27}H_{30}O_{15}$ $593.15119$ Emodin-O-diglucoside $C_{27}H_{30}O_{14}$ $511.16628$ Naritutin $C_{27}H_{30}O_{14}$ $511.16628$ Naritutin $C_{27}H_{30}O_{14}$ $571.15628$ Sennoside B $C_{27}H_{30}O_{14}$ $571.16628$ Naritutin $C_{27}H_{30}O_{14}$ $571.16628$ Naritutin $C_{27}H_{30}O_{14}$ $571.16628$ Naritutin $C_{27}H_{30}O_{14}$ $571.16628$ Naritutin $C_{27}H_{30}O_{14}$ $571.1367$ Sennoside $C_{27}H_{30}O_{14}$ $571.1367$ Maritutin $C_{27}H_{30}O_{14}$ $571.1367$ Sentoside $C_{27}H_{30}O_{14}$ $571.1367$ Partunin $C_{21}H_{22}O_{9}$ $419.11356$ Prunin $C_{21}H_{22}O_{9}$ $419.13366$ Naringin $C_{21}H_{22}O_{9}$ $851.18648$ Sennoside A $C_{2}H_{36}O_{15}$ $623.19814$ Sennoside A $C_{2}H_{36}O_{15}$ $623.19814$ Sennoside A $C_{2}H_{36}O_{15}$ $623.19814$ Sennoside A $C_{2}H_{36}O_{15}$ $623.19814$  | Determined $C_{39}H_{34}O_{16}$ $C_{23}H_{32}O_{16}$ $C_{23}H_{32}O_{16}$ $C_{23}H_{32}O_{15}$ $C_{23}H_{32}O_{13}$ $C_{23}H_{23}O_{13}$ $C_{23}H_{23}O_{23}$ $C_{23}H_$   | gidin $C_{32}H_{32}O_{16}$ $C_{23}H_{32}O_{16}$ $C_{23}H_{32}O_{16}$ $C_{23}H_{32}O_{15}$ $C_{23}H_{32}O_{13}$ $C_{23}H_{32}O_{13}$ $C_{23}H_{32}O_{13}$ $C_{23}H_{32}O_{13}$ $C_{23}H_{23}O_{14}$ $C_{23}H_{23}O_{12}$ $C_{23}H_{23}O$   | multiculut $C_{32}H_{32}O_{16}$ $C_{23}H_{32}O_{16}$ $C_{23}H_{32}O_{16}$ $C_{23}H_{32}O_{15}$ $C_{23}H_{32}O_{15}$ $C_{23}H_{32}O_{15}$ $C_{23}H_{32}O_{15}$ $C_{23}H_{32}O_{15}$ $C_{23}H_{32}O_{15}$ $C_{23}H_{32}O_{15}$ $C_{23}H_{23}O_{15}$ $C_{23}H_{23}O_{15}$ $C_{23}H_{23}O_{15}$ $C_{23}H_{23}O_{13}$ $C_{23}H_{23}O_{13}$ $C_{23}H_{23}O_{14}$ $C_{23}H_{23}O_{12}$ $C_{23}H_$   
   | diameter $C_{36}H_{32}O_{16}$ $C_{21}H_{32}O_{16}$ $C_{21}H_{32}O_{16}$ $C_{21}H_{14}O_{20}$ $771.23532$ moyl-6-O-galloyl- $C_{20}H_{24}O_{9}$ $477.13476$ $623.16176$ acenin $C_{20}H_{24}O_{9}$ $477.13476$ $623.16176$ acenin $C_{20}H_{30}O_{15}$ $595.16575$ $593.15119$ acenin $C_{27}H_{30}O_{15}$ $593.15119$ $247.09649$ acenin $C_{27}H_{30}O_{15}$ $593.15119$ $51118648$ side B $C_{27}H_{30}O_{14}$ $511106628$ $51118648$ achromone $C_{27}H_{30}O_{14}$ $579.17083$ $5111950$ achromone $C_{27}H_{30}O_{14}$ $579.17083$ $51118648$ ophanol-1, 8-O-dicglucoside $C_{27}H_{30}O_{13}$ $579.17083$ $5111950$ did $C_{27}H_{30}O_{12}$ $623.19814$ $5111350$ ophanol-1, 8-O-dicglucoside $C_{27}H_{30}O_{12}$ $579.17083$ $511.1350$ ophanol-1, 8-O-dicglucoside $C_{21}H_{22}O_{10}$ $419.13366$ $5101.2356$ dia dai $C_{21}H_{22}O_{12}$   |

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Table 1 (Contd.)

No.	$t_{ m R} ({ m min})$	Identification	Formula	Monoisotopic mass $(m/z)$	Detected mass $(m/z)$	Ion mode	mqq	(z/m) SW/SW	Main source
70	32.36	Physcion-1-O-glucuronic acid	$C_{22}H_{20}O_{11}$	459.09329	459.09368	$[M - M]^{-}$	-0.86	283.06124, 268.03815, 212.04737, 184.05123	R
71	32.78	Diosmin	$C_{28}H_{32}O_{15}$	607.16684 609.18140	607.16710 609.18081	$[M - H]^{-}$	-0.42 0.96	299.10025, 284.29568 301.06863 286.04525	U
72	32.89	Neohesperidin	$C_{28}H_{34}O_{15}$	611.19705	611.19637	$[M + H]^{+}$	0.53	449.14228, 303.08417, 153.01734	C
73	32.89	Hesperetin-7-0-glucoside	$C_{22}H_{24}O_{11}$	465.13914	465.13958	$[\mathbf{M} + \mathbf{H}]^{+}$	-0.92	303.08652, 288.03284, 153.01532	U
74	32.90	Sakuranetin	$C_{22}H_{24}O_{10}$	449.14422	449.14477	$[\mathbf{M} + \mathbf{H}]^{\dagger}$	-1.22	301.06945, 287.08765, 286.045473	U
75	32.97	Magnoloside E	$C_{28}H_{34}O_{15}$	609.18249	609.18261	[M – H]	0.19	447.15213, 315.11019, 161.02613	Μ
76	33.05	Homoeriodictyol	$C_{16}H_{14}O_{6}$	303.08631	303.08630	$[\mathbf{H} + \mathbf{H}]^{+}$	0.06	288.04856, 153.01712, 117.03375	U
77	33.18	Limocitrin-3-0-(3-hydroxy-3-	$C_{29}H_{32}O_{17}$	653.17123	653.17394	$[M + H]^+$	-0.73	539.13891, 347.07494	C
78	33.40	methylglutarate)-glucoside 1-Dihvdrocinnamovl-6-0-oallovl-	CHO	463.12459	463.12503	[M – H]	-0.97	331-06693-313-05656-211-02564.	Ч
	0 4 9 9	glucoside	II ~ 47277 ~					169.01332	;
79	34.30	Magnolignan B	$C_{18}H_{20}O_5$	315.12380	315.12417	$[M - H]^{-}$	-0.95	267.10167, 249.09178, 221.09658,	М
80	34.51	Meranzin	$C_{15}H_{16}O_{4}$	261.11214	261.11203	$[M + H]^+$	0.42	133.00019 243.10142, 159.04375, 103.05456	U
81	34.59	Hesperidone hydrate	$C_{15}H_{18}O_5$	296.14925	296.14925	$[M + HH_4]^+$	0.00	403.12656, 418.12351, 165.05352	C
82	35.89	Diosmetin-7-0-(6"-0-acetyl)	$C_{30}H_{34}O_{17}$	667.18688	667.18653	$[M + H]^+$	-0.26	301.07182, 286.05412	C
		neohesperidoside							
83	36.14	Natsudaidain-3-0-(3-hydroxy-3- methylglutarate)-glucoside	$C_{33}H_{40}O_{18}$	725.22874	725.22824	$[M + H]^+$	0.47	581.18621, 419.13224	C
84	36.29	Magnolignan A	$\mathrm{C_{18}H_{20}O_4}$	299.12888	299.12924	$[M - H]^{-}$	-1.18	239.10865, 221.10746	Μ
85	37.01	Physcion-8-O-glucuronic acid	$C_{22}H_{20}O_{11}$	459.09329	459.09369	$[M - H]^{-}$	-0.89	283.06138, 268.03804, 239.03501,	R
								224.04837	
86	38.08	Cinnamoyl-6-0-galloyl-glucoside	$C_{22}H_{22}O_{11}$	461.10894	461.10948	$[M - H]^-$	-1.18	401.08794, 313.05874, 285.03987, 271.04612	К
87	39.00	Didymin	$C_{28}H_{34}O_{14}$	595.20213	595.20196	$[M + H]^+$	0.70	433.14783, 287.09001, 153.01794	C
88	39.08	Beta-hydroxyacteoside	$C_{29}H_{36}O_{16}$	639.19306	639.19315	$[M - H]^-$	-0.14	503.14287, 477.16173, 161.02408, 133 03174	М
89	39.39	6-Methoxy-8-0-ß-p-glucoside	$\mathrm{C}_{20}\mathrm{H}_{24}\mathrm{O}_{9}$	407.13476	407.13521	$[M - H]^{-}$	-1.12	253.04989, 201.09011, 146.96598	R
90	39.47	Magnoloside A	$C_{29}H_{36}O_{15}$	623.19705	623.19645	$[M + H]^{+}$	0.95	461.16607, 161.02574	Μ
91	39.51	Chrysophanol isomer	$C_{15}H_{10}O_4$	253.05063	253.05093	$[M - H]^{-}$	-1.23	225.05517, 210.03072, 197.06054	R
92	39.52	Chrysophanol-1-0-glucoside	$C_{21}H_{20}O_9$	415.10346	415.10402	$[M - H]^{-}$	-1.35	253.04884, 225.05627, 209.05942	R
93	39.70	Emodin-O-glucoside	$C_{21}H_{20}O_{10}$	431.09837	431.09867	$[M - H]^-$	-0.7	269.04562, 241.04997, 225.05524	R
94	39.74	3,5,6,7,8,3′,4′-Heptamethoxy flavone	$C_{22}H_{24}O_9$	433.14931	433.14910	$[M + H]^+$	0.49	418.12356, 403.12656, 165.05354	C
95	39.79	1- <i>P</i> -Coumaroyl-6- <i>O</i> -galloyl-di-	$C_{29}H_{36}O_{16}$	639.19306	639.19367	$[M - H]^{-}$	-0.96	477.13972, 313.05688, 211.02412,	R
, c		glucoside	:					141.03624	C
0 10	39.87 20.00	Sakuranın Donoitin	C <sub>16</sub> H <sub>14</sub> O <sub>5</sub>	28/.09142 FOF 20212	28/.0912/	[M + M]	0.46	133.U1/21, 133.U0492 422 14040 007 00440 452 45740	50
97 98	39.00 39.03	Folletiti Magnoloside M	C28H34U9	523 19705 623 19705	593.20108 623.19643	[H + M]	67.0 0 00	433.14812, 287.09110, 133.10712 461 16597 - 161 02576	ב כ
66	39.98	6'-0-trans-Ferulovinodakenin	C291136013	583.18213	583.18148	$[M - H]^{-1}$	1.07	247,10278, 229,44072, 175,28676	z
1			71 - 7606-	607.17865	607.17861	$[M + Na]^+$	-0.02	249.11947, 177.29759	i
100	40.24	Chrysophanol	$C_{15}H_{10}O_4$	253.05063	253.05094	$[M - H]^{-}$	-1.21	225.05537, 210.03104, 202.88598	R
101	40.93	Marmin	$\mathrm{C_{19}H_{24}O_5}$	333.16965	333.16942	$[M + H]^+$	0.70	163.03837, 107.08582	C

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$t_{ m R}~({ m min})$	Identification	Formula	Monoisotopic mass $(m/z)$	Detected mass ( <i>m</i> / <i>z</i> )	Ion mode	uıdd	(z/m) SW/SW	Main source
41.15	2-(2'-hydroxypropyl)-5-methyl-7- hvdroxvchromone	$C_{13}H_{14}O_4$	233.08193	233.08217	$[M - H]^{-}$	-1.01	189.05568, 146.96597, 129.97617	К
41.29	Magnolignan C	$\mathrm{C}_{18}\mathrm{H}_{20}\mathrm{O}_4$	299.12888	299.12928	$[M - H]^{-}$	-1.33	258.09247, 239.10852, 197.06244	Μ
41.55	Naringenin	$C_{15}H_{12}O_5$	273.07575	273.07562	$[M + H]^+$	0.48	153.17823, 133.06712	U
42.12	Procyanidin B	$C_{30}H_{26}O_{12}$	577.13515	577.13535	$[M - H]^-$	-0.49	425.08747, 407.07637, 289.07107	К
42.26	Physcion-8- <i>O</i> -glucuronic acid methyl ester	$C_{23}H_{22}O_{11}$	473.10894	473.10946	$[M - H]^{-}$	-1.11	283.06094, 268.03811, 240.04325	R
42.27	Emodin-0-malonyl-glucose	$C_{24}H_{22}O_{13}$	517.09876	517.09935	$[M - M]^{-}$	-1.15	$473.10884, 431.09157, 269.04531, \\241.05131$	Ч
42.51	Chrysophanol-8-0-glucoside	$C_{21}H_{20}O_{0}$	415.10346	415.10400	$[M - H]^-$	-1.30	253.04984, 225.05618, 209.05959	Я
42.51	Emodin	$C_{15}H_{10}O_5$	269.04555	269.04588	$[M - H]^{-}$	-1.22	241.05016, 225.05524, 197.06027	R
42.53	Aloe-emodin- <i>O</i> -glucoside	$C_{21}H_{20}O_{10}$	431.09885	431.09886	$[M - H]^{-}$	-1.14	269.04462, 239.03647, 211.02524	Я
42.61	Physcion-1-O-glucoside	$C_{22}H_{22}O_{10}$	445.11402	445.11460	$[M - H]^{-}$	-1.30	427.03257, 283.06205, 269.04607	R
42.61	Physcion	$C_{16}H_{12}O_5$	283.06120	283.06162	$[M - H]^{-}$	-1.49	283.07696, 268.04557, 240.04266	Я
42.62	Hesperetin	$C_{16}H_{14}O_6$	303.08631	303.08608	$[M + H]^{+}$	0.77	153.01741, 110.04783	U
42.85	Magnatriol	$C_{15}H_{14}O_{3}$	241.08702	241.08730	$[M - H]^-$	-1.17	223.07597, 197.09716, 133.06719	М
42.97	Magnolignan E	$\mathrm{C}_{18}\mathrm{H}_{18}\mathrm{O}_4$	297.11323	297.11365	$[M - H]^{-}$	-1.39	225.09132, 184.05786, 183.04759	М
43.29	5-Hydroxy-6,7,3',4',5'-	$\mathrm{C_{20}H_{20}O_8}$	389.12309	389.12283	$[M + H]^+$	0.67	374.09631, 359.08221, 356.08174,	U
	pentamethoxyflavone						328.07931	
43.54	5-0-Demethylnobiletin	$\mathrm{C_{20}H_{20}O_7}$	373.12818	373.12781	$[M + H]^+$	0.73	358.10001, 343.07224, 325.06554, 297.06973	C
43.78	Demethylnobiletin	$C_{2n}H_{2n}O_{8}$	389.12309	389.12282	$[M + H]^+$	0.79	359.08112, 360.07831, 341.06984	U
44.32	Obovatol	$C_{18}H_{18}O_3$	281.11832	281.11866	$[M - H]^-$	-1.20	267.10174, 249.08513	М
44.54	Sinensetin	$\mathrm{C}_{20}\mathrm{H}_{20}\mathrm{O}_7$	373.12818	373.12790	$[M + H]^{+}$	0.74	175.01549, 147.03194, 119.01593	U
44.59	Honokiol	$C_{18}H_{18}O_2$	265.12340	265.12413	$[M - H]^{-}$	-0.42	224.08126, 223.07514, 197.05923	Μ
44.59	O-Prenyl-umbelliferone	$\mathrm{C}_{14}\mathrm{H}_{14}\mathrm{O}_3$	229.08072	229.08726	$[M - H]^{-}$	-1.04	160.01707, 142.17814	z
44.74	Aloe-emodin	$C_{15}H_{10}O_5$	269.04555	269.04598	$[M - H]^{-}$	-1.60	253.05121, 240.04247, 211.03968	Я
44.94	Magnaldehyde D	$C_{16}H_{14}O_{3}$	253.08702	253.08735	$[M - H]^{-}$	-1.32	235.07963, 207.08634, 194.04012	М
45.13	Phelloptein	$\mathrm{C_{17}H_{16}O_{5}}$	323.08899	323.08875	$[M + Na]^+$	0.76	269.07627, 231.01796	z
45.25	Notopterol	$C_{21}H_{22}O_5$	353.13945	353.13988	$[M - H]^{-}$	-1.21	203.17578, 159.09786, 147.63478	z
			377.13594	377.13559	$[M + Na]^+$	0.95	205.20652, 161.11072	
45.38	Rhein	$C_{15}H_8O_6$	283.02481	283.02504	$[M - H]^{-}$	-0.82	257.04507, 239.03461, 211.03958	R
45.38	Danthron	$\mathrm{C}_{14}\mathrm{H}_{8}\mathrm{O}_{4}$	239.03498	239.03530	$[M - H]^{-}$	-1.33	186.73096, 141.51394, 130.71196	Я
45.58	Nobiletin	$C_{21}H_{22}O_8$	403.13874	403.13819	$[M + H]^+$	1.41	373.09359, 355.08584, 327.08476	U
45.69	Nomilin	$C_{28}H_{34}O_9$	515.22756	515.22753	$[M + H]^+$	0.05	469.21806, 455.20675, 411.21462,	U
45.88	Notoptol	$C_{24}H_{22}O_{5}$	353.13945	353.13987	$[M - H]^-$	-1.19	101.03634 225.17472, 207.13978, 189.14075	z
	T		377.13594	377.13563	$[M + Na]^+$	0.97	227.19076, 209.14289	
46.17	Magnaldehyde E	$C_{16}H_{14}O_3$	253.08702	253.08735	$[M + H]^{+}$	-1.32	225.09424, 184.05624, 183.05074	Μ
46.17	Magnolol	$\mathrm{C}_{18}\mathrm{H}_{18}\mathrm{O}_2$	265.12340	265.12394	$[M - H]^{-}$	-0.39	247.10096, 245.09517, 223.07491	М
46.19	p-Hydroxyphenethyl anisate	$C_{16}H_{16}O_4$	295.09408	295.09386	$[M + Na]^+$	0.73	153.07368, 138.08654	z
46.54	Obovaaldehyde	$\mathrm{C}_{16}\mathrm{H}_{14}\mathrm{O}_4$	269.08193	269.08215	$[M - H]^-$	-0.80	152.01478, 124.02018	М
46.70	Isosinensetin	$\mathrm{C}_{20}\mathrm{H}_{20}\mathrm{O}_7$	373.12818	373.12783	$[M + H]^{+}$	0.94	358.10398, 343.08158, 315.08276	U
46.70	Tangeretin	$\mathrm{C_{20}H_{20}O_7}$	395.11012	395.10998	$[M + Na]^+$	0.35	278.54947, 276.55982, 243.12708	C

<sup>a</sup> Ps: C represented Aurantii fructus immaturus; R represented Rheum palmatum L.; M represented Magnoliae Officmalis Cortex; N represented Notopterygii Rhizoma Et Radix.

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cleaving of the glycosidic linkage and losing  $C_6H_{10}O_5$  (162 Da) from m/z 431.09157, m/z 241.05131 is the result of losing CO (28 Da) at m/z 269.04531. The characterization of anthraquinone compounds in SHD is inferred from this cleavage rule and related literatures.<sup>20,21</sup>

#### 3.4 Characterization of glucosides in SHD

Glucosides are formed by the esterification of acid with glucose. According to the type of acid, it can be divided into cinnamoyldihydrocinnamoyl-glucose, p-cinnamoyl-glucose, glucose, dihydro-p-cinnamoyl glucose, galloyl-glucose, and resveratrolgalloyl-glucose in rhubarb. They are vulnerable to loss of neutral fragments 148 Da, 150 Da, 164 Da, 166 Da, 170 Da, and 228 Da, respectively. Galloyl-glucose was selected to illustrate the fragmentation pathways. In negative ion mode, adduct ion at m/z 331.06759 ([M – H]<sup>-</sup>) indicating an elemental composition of  $C_{13}H_{16}O_{10}$ . The mass spectrum (Fig. 3D) shows that the main fragment ions are m/z 313.05289, 271.04772, 211.02436, 169.01338, and 125.00325. Among them, m/z 313.05289 is presumed by losing H<sub>2</sub>O (18 Da) from  $[M - H]^{-}$ , m/z 271.04772 is inferred by losing  $C_2H_4O_2$  (60 Da) from  $[M - H]^-$ , m/z211.02436 is the result of losing  $C_4H_8O_4$  (120 Da) from [M -H]<sup>-</sup>, m/z 169.01338 is speculated by cleaving of the glycosidic linkage and losing glucose  $C_6H_{10}O_5$  (162 Da) from  $[M - H]^-$ , and m/z 125.00325 is deduced by losing CO<sub>2</sub> (44 Da) from m/z169.01338. The characterization of glucosides in SHD is concluded by referring to the cleavage rule and related literature.21

#### 3.5 Characterization of epicatechin in SHD

Epicatechin was selected to illustrate the fragmentation pathways for catechins. The adduct ion at 289.07213 ( $[M - H]^{-}$ ) indicating an elemental composition of  $C_{15}H_{14}O_6$ , and the MS/ MS spectrum (Fig. 3E) is presented that the main fragment ions are m/z 245.08235, 203.07153. Among them, m/z 245.08235 is presumed by losing CO<sub>2</sub> (44 Da) from  $[M - H]^{-}$ , and m/z 203.07153 is inferred by losing of  $C_2H_2O$  (42 Da) from m/z 245.08235. The characterization of catechins in SHD is concluded by referring to the cleavage rule and related literatures.<sup>21-23</sup>

#### 3.6 Characterization of lignans in SHD

Most of the lignans have the presence of allyl and hydroxyl groups, which relative positions are different, their cleavage methods will be different. Honokiol and magnolol were selected to illustrate the fragmentation pathways. Magnolol showed m/z 265.12394 ( $[M - H]^-$ ) in the negative ion mode, which indicated the elemental composition of C<sub>18</sub>H<sub>18</sub>O<sub>2</sub>. The mass spectrum (Fig. 3F) shows that the main fragment ions are m/z 247.10096, 245.09517, 223.07491. Among them, m/z 247.10096 is presumed by losing H<sub>2</sub>O (18 Da) from  $[M - H]^-$ , m/z 245.09517 is inferred by losing H<sub>2</sub> (2 Da) from m/z 247.10096, and m/z 223.07491 is obtained by losing C<sub>3</sub>H<sub>6</sub> (42 Da) from  $[M - H]^-$ . Honokiol showed m/z 265.12413 ( $[M - H]^-$ ) in the negative ion mode, which indicated the elemental composition of C<sub>18</sub>H<sub>18</sub>O<sub>2</sub>. The mass spectrum (Fig. 3G) shows

that the main fragment ions are m/z 224.08126, 223.07514, 197.05923. Among them, m/z 224.08126 is presumed by losing  $C_3H_5$  (41 Da) from  $[M - H]^-$ , m/z 223.07514 is inferred by losing  $C_3H_6$  (42 Da) from  $[M - H]^-$ , and m/z 197.05923 is obtained by losing of  $C_2H_2$  (26 Da) by m/z 223.07514. The characterization of lignans in SHD is concluded by referring to the cleavage rule and related literatures.<sup>24,25</sup>

#### 3.7 Characterization of phenylpropanoid glycosides in SHD

The phenylpropanoid glycosides are composed of glucose and phenethyl alcohol, which mainly based on the loss of coffee groups (162 Da). Verbascoside is chosen as an example to explain the cleavage pathway. It showed m/z 623.19814 ([M – H]<sup>-</sup>) in the negative ion, which indicated an elemental composition of C<sub>29</sub>H<sub>36</sub>O<sub>15</sub>. The mass spectrum (Fig. 3H) shows that its main fragment ion is m/z 461.16314, 161.02265. Among them, m/z 461.16314 is presumed by losing C<sub>9</sub>H<sub>6</sub>O<sub>3</sub> (162 Da) from [M – H]<sup>-</sup>, and m/z 161.02265 is inferred by losing C<sub>20</sub>H<sub>30</sub>O<sub>12</sub> (462 Da) from [M – H]<sup>-</sup>. The characterization of phenylpropanoid glycosides in SHD is concluded by referring to the cleavage rule and related literatures.<sup>24,25</sup>

#### 3.8 Characterization of alkaloids in SHD

The main rupture method of alkaloids is the loss of N. (*R*)-Oblongine is chosen as an example to explain the cleavage pathway. It showed an m/z 314.17473 ( $[M + H]^+$ ) in the positive ion mode, which indicated the elemental composition of  $C_{19}H_{24}NO_3^+$ . The mass spectrum (Fig. 3I) shows that the main fragment ions are m/z 269.11625, 237.09024, 175.07485, 107.04861. Among them, m/z 269.11625 is presumed by losing  $C_2H_6NH$  (45 Da) from  $[M + H]^+$ , m/z 237.09024 is inferred by losing CH<sub>4</sub>O (32 Da) at m/z 269.11625, m/z 175.07485 is obtained by losing C<sub>6</sub>H<sub>6</sub>O (94 Da) from m/z 269.11625, and m/z 107.04861 is speculated by losing  $C_{12}H_{18}NO_2$  (207 Da) from  $[M + H]^+$ . The characterization of alkaloids in SHD is concluded by referring to the cleavage rule and related literature.<sup>25</sup>

#### 3.9 Characterization of coumarins in SHD

The main cleavage mode of coumarins is loss of CO and CO<sub>2</sub>, while coumarin glycosides lose glucose firstly, and then break by the above-mentioned cleavage law. Bergaptol is chosen as an example to explain the cleavage pathway. It showed an m/z 201.01957 ( $[M - H]^-$ ) in the negative ion mode, which indicated an elemental composition of C<sub>11</sub>H<sub>6</sub>O<sub>4</sub>. The mass spectrum (Fig. 3J) shows that the main fragment ions are m/z 185.02456, 157.17256, 129.10451, 101.96320. Among them, m/z 185.02456 is presumed by losing OH (17 Da) from  $[M - H]^-$ , m/z 157.17256, is presumed by losing CO (28 Da) from m/z 185.02456, and m/z 101.96320 is obtained by losing CO (28 Da) from m/z 187.17256, and m/z 101.96320 is obtained by losing CO (28 Da) from m/z 169.10451. The characterization of coumarins in SHD is concluded by referring to the cleavage rule and related literatures.<sup>26-28</sup>

### 4. Conclusions

In our study, a rapid, swift and straightforward analytical method with the help of UHPLC-FT-ICR-MS/MS was successfully developed for the first time to separate and identify the chemical constituents of SHD. A total of 137 compounds in SHD were identified or tentatively characterized, and 11 compounds were accurately identified by reference. The research indicated that SHD mainly contains 42 flavonoids (in Aurantii fructus immaturus and Rheum palmatum L.), 3 triterpenoids (in Aurantii fructus immaturus), 23 anthraquinones (in Rheum palmatum L.), 14 glucosides, 5 catechins and 2 anthranone (in Rheum palmatum L.), 11 phenylpropanoid glycosides, 5 alkaloids and 11 lignans (in Magnoliae Officmalis Cortex), 16 coumarins (in Notopterygii Rhizoma Et Radix and in Aurantii fructus immaturus), which has laid the foundation for prospective research associated with SHD. And it is hoped to be useful to identify and characterize the components in other TCMs. And it provided a basis for finding the prototype components and metabolites in the serum of containing SHD.

In this study, the structure of the compound, except for the comparison of the reference, was obtained through the combination of retention time, accurate primary and secondary mass spectrometry information, cracking rules of the same compound and literature comparison. The identification of compound structure by this method is limited to known compounds, because this method only mass spectrometry for identification.

### Abbreviations

TCMs	Traditional Chinese medicines
SHD	Sanhua decoction
Zhishi	Aurantii fructus immaturus
Dahuang	Rheum palmatum L
Houpu	Magnoliae Officmalis Cortex
Qianghuo	Notopterygii Rhizoma Et Radix
BBB	Brain blood barrier
UHPLC-FT-ICR-	Ultra high performance liquid
MS/MS	chromatography coupled with Fourier
	transform ion cyclotron resonance mass
	spectrometry
BPC	Base peak ion chromatograms
EIC	Extract ion chromatograms
RDA	Diels–Alder reaction

### Conflicts of interest

The authors declare that there are no conflicts of interest.

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