Supporting information

Flavans with cytotoxic activity from the stem and root bark of *Daphne giraldii*

Qian Sun,\textsuperscript{ab} Feifei Li,\textsuperscript{abc} Di Wang,\textsuperscript{ab} Jie Wu,\textsuperscript{ab} Guodong Yao,\textsuperscript{d} Xue Li,\textsuperscript{e} Lingzhi Li,\textsuperscript{ab} Qingbo Liu,\textsuperscript{ab} Xiaoxiao Huang\textsuperscript{ab} and Shaojiang Song\textsuperscript{*ab}

\textsuperscript{a} School of Traditional Chinese Materia Medica, Shenyang Pharmaceutical University, Shenyang 110016, People’s Republic of China.
\textsuperscript{b} Key Laboratory of Structure-Based Drug Design & Discovery (Ministry of Education), Shenyang Pharmaceutical University, Shenyang 110016, People’s Republic of China.
\textsuperscript{c} Yangtze River Pharmaceutical (Group) Co., Ltd., Taizhou 225300, People’s Republic of China.
\textsuperscript{d} China-Japan Research Institute of Medical Pharmaceutical Sciences, Shenyang Pharmaceutical University, Shenyang 110016, People’s Republic of China.
\textsuperscript{e} School of Life Sciences and Biopharmaceutics, Shenyang Pharmaceutical University; Shenyang 110016, People’s Republic of China.

**Corresponding author:**

Tel.: +86 24 23986510; fax: +86 24 23986088 (S. J. Song).

E-mail addresses: songsj99@163.com (S. J. Song).
List of supplementary content

**Figure S1.1** UV spectrum of compound 1

**Figure S1.2** IR spectrum of compound 1

**Figure S1.3** $^1$H NMR spectrum (400 MHz, DMSO-$d_6$) of compound 1

**Figure S1.4** $^{13}$C NMR spectrum (100 MHz, DMSO-$d_6$) of compound 1

**Figure S1.5** HMBC spectrum (600 MHz, DMSO-$d_6$) of compound 1

**Figure S1.6** HRESIMS spectrum of compound 1

**Figure S1.7** CD spectra of compound 1

**Figure S2.1** UV spectrum of compound 2

**Figure S2.2** IR spectrum of compound 2

**Figure S2.3** $^1$H NMR spectrum (600 MHz, DMSO-$d_6$) of compound 2

**Figure S2.4** $^{13}$C NMR spectrum (150 MHz, DMSO-$d_6$) of compound 2

**Figure S2.5** HMBC spectrum (600 MHz, DMSO-$d_6$) of compound 2

**Figure S2.6** HRESIMS spectrum of compound 2

**Figure S2.7** CD spectra of compound 2

**Figure S3.1** UV spectrum of compound 3

**Figure S3.2** IR spectrum of compound 3

**Figure S3.3** $^1$H NMR spectrum (400 MHz, DMSO-$d_6$) of compound 3

**Figure S3.4** $^{13}$C NMR spectrum (100 MHz, DMSO-$d_6$) of compound 3

**Figure S3.5** HMBC spectrum (600 MHz, DMSO-$d_6$) of compound 3

**Figure S3.6** HSQC spectrum (600 MHz, DMSO-$d_6$) of compound 3

**Figure S3.7** HRESIMS spectrum of compound 3

**Figure S3.8** CD spectra of compound 3

**Figure S4.1** UV spectrum of compound 4

**Figure S4.2** IR spectrum of compound 4

**Figure S4.3** $^1$H NMR spectrum (600 MHz, DMSO-$d_6$) of compound 4

**Figure S4.4** $^{13}$C NMR spectrum (150 MHz, DMSO-$d_6$) of compound 4

**Figure S4.5** HMBC spectrum (600 MHz, DMSO-$d_6$) of compound 4

**Figure S4.6** HRESIMS spectrum of compound 4
Figure S4.7 CD spectra of compound 4
Figure S5.1 UV spectrum of compound 5
Figure S5.2 IR spectrum of compound 5
Figure S5.3 $^1$H NMR spectrum (600 MHz, CD$_3$OD-d$_4$) of compound 5
Figure S5.4 $^{13}$C NMR spectrum (150 MHz, CD$_3$OD-d$_4$) of compound 5
Figure S5.5 HMBC spectrum (600 MHz, CD$_3$OD-d$_4$) of compound 5
Figure S5.6 HSQC spectrum (600 MHz, CD$_3$OD-d$_4$) of compound 5
Figure S5.7 HRESIMS spectrum of compound 5
Figure S5.8 CD spectra of compound 5
Figure S6.1 UV spectrum of compound 6
Figure S6.2 IR spectrum of compound 6
Figure S6.3 $^1$H NMR spectrum (600 MHz, DMSO-d$_6$) of compound 6
Figure S6.4 $^{13}$C NMR spectrum (150 MHz, DMSO-d$_6$) of compound 6
Figure S6.5 HMBC spectrum (600 MHz, DMSO-d$_6$) of compound 6
Figure S6.6 HSQC spectrum (600 MHz, DMSO-d$_6$) of compound 6
Figure S6.7 HRESIMS spectrum of compound 6
Figure S6.8 CD spectra of compound 6
Figure S7.1 UV spectrum of compound 7
Figure S7.2 IR spectrum of compound 7
Figure S7.3 $^1$H NMR spectrum (300 MHz, CDCl$_3$) of compound 7
Figure S7.4 $^{13}$C NMR spectrum (75 MHz, CDCl$_3$) of compound 7
Figure S7.5 HMBC spectrum (600 MHz, CDCl$_3$) of compound 7
Figure S7.6 HSQC spectrum (600 MHz, CDCl$_3$) of compound 7
Figure S7.7 HRESIMS spectrum of compound 7
Figure S7.8 CD spectra of compound 7
Figure S8.1 UV spectrum of compound 8
Figure S8.2 IR spectrum of compound 8
Figure S8.3 $^1$H NMR spectrum (300 MHz, CDCl$_3$) of compound 8
Figure S8.4 $^{13}$C NMR spectrum (75 MHz, CDCl$_3$) of compound 8
Figure S8.5 HMBC spectrum (600 MHz, CDCl$_3$) of compound 8
Figure S8.6 HSQC spectrum (600 MHz, CDCl$_3$) of compound 8
Figure S8.7 HRESIMS spectrum of compound 8
Figure S8.8 CD spectra of compound 8
Figure S9.1 UV spectrum of compound 9
Figure S9.2 IR spectrum of compound 9
Figure S9.3 $^1$H NMR spectrum (300 MHz, DMSO-$_d_6$) of compound 9
Figure S9.4 $^{13}$C NMR spectrum (150 MHz, DMSO-$_d_6$) of compound 9
Figure S9.5 HMBC spectrum (600 MHz, DMSO-$_d_6$) of compound 9
Figure S9.6 HSQC spectrum (600 MHz, DMSO-$_d_6$) of compound 9
Figure S9.7 HRESIMS spectrum of compound 9
Figure S9.8 CD spectra of compound 9
Figure S10.1 UV spectrum of compound 10
Figure S10.2 IR spectrum of compound 10
Figure S10.3 $^1$H NMR spectrum (300 MHz, DMSO-$_d_6$) of compound 10
Figure S10.4 $^{13}$C NMR spectrum (150 MHz, DMSO-$_d_6$) of compound 10
Figure S10.5 HMBC spectrum (600 MHz, DMSO-$_d_6$) of compound 10
Figure S10.6 HSQC spectrum (600 MHz, DMSO-$_d_6$) of compound 10
Figure S10.7 HRESIMS spectrum of compound 10
Figure S10.8 CD spectra of compound 10
Figure S11.1 UV spectrum of compound 11
Figure S11.2 IR spectrum of compound 11
Figure S11.3 $^1$H NMR spectrum (400 MHz, DMSO-$_d_6$) of compound 11
Figure S11.4 $^{13}$C NMR spectrum (100 MHz, DMSO-$_d_6$) of compound 11
Figure S11.5 HMBC spectrum (600 MHz, DMSO-$_d_6$) of compound 11
Figure S11.6 HRESIMS spectrum of compound 11
Figure S11.7 CD spectra of compound 11
Figure S12.1 UV spectrum of compound 12
Figure S12.2 IR spectrum of compound 12
Figure S12.3 $^1$H NMR spectrum (300 MHz, CD$_3$OD-$_d_4$) of compound 12
Figure S12.4 $^{13}$C NMR spectrum (150 MHz, CD$_3$OD-$_d_4$) of compound 12
Figure S12.5 HMBC spectrum (600 MHz, CD$_3$OD-$d_4$) of compound 12
Figure S12.6 HSQC spectrum (600 MHz, CD$_3$OD-$d_4$) of compound 12
Figure S12.7 HRESIMS spectrum of compound 12
Figure S12.8 CD spectra of compound 12
Figure S13.1 UV spectrum of compound 13
Figure S13.2 IR spectrum of compound 13
Figure S13.3 $^1$H NMR spectrum (400 MHz, DMSO-$d_6$) of compound 13
Figure S13.4 $^{13}$C NMR spectrum (100 MHz, DMSO-$d_6$) of compound 13
Figure S13.5 HMBC spectrum (600 MHz, DMSO-$d_6$) of compound 13
Figure S13.6 HRESIMS spectrum of compound 13
Figure S13.7 CD spectra of compound 13
Figure S14 Key HMBC correlations of new compounds daphnegiravans A–M (1–13)
Figure S15 The DNA histograms in Hep3B cells after treatment with compounds 3, 9-12 for 48 h
Figure S16 The AV FITC/PI histogram in Hep3B cells after treatment with compound 12 for 48 h
Figure S17 The ROS level histograms in Hep3B cells after treatment with compounds 9 and 12 for 48 h
NMR data of known compounds (14-21)
Figure S1.1 UV spectrum of compound 1

Figure S1.2 IR spectrum of compound 1
Figure S1.3 $^1$H NMR spectrum (400 MHz, DMSO-$d_6$) of compound 1

Figure S1.4 $^{13}$C NMR spectrum (100 MHz, DMSO-$d_6$) of compound 1
Figure S1.5 HMBC spectrum (600 MHz, DMSO-\textit{d}_6) of compound 1

**Mass Spectrum Molecular Formula Report**

Analysis Info
- Analysis Name: D:/Data/20140703CEYANG/SQ-41.d
- Method: Liu_Fang_20130123.m
- Sample Name: SQ-41
- Comment:

Acquisition Parameter
- Source Type: ESI
- Focus: Active
- Scan Bng: 50 m/z
- Scan End: 1000 m/z

Ion Polarity: Positive
- Set Nebulizer: 0.3 Bar
- Set Capillary: 4500 V
- Set End Plate Offset: -500 V
- Set Collision Cell RF: 300.0 Vpp
- Set Divert Valve: Source
- Set Dry Heater: 160 °C
- Set Dry Gas: 4.0 l/min

Generate Molecular Formula Parameter
- Formula, min.: C20H20O3H
- Formula, max.: C20H20O3H
- Measured m/z: 309.148
- Tolerance: 5 ppm
- Charge: 1
- Minimum: 0
- Maximum: 0
- Electron Configuration both
- N Rule: Maximum: 3
- Estimate Carbon: yes

Figure S1.6 HRESIMS spectrum of compound 1
Figure S1.7 CD spectra of compound 1

Figure S2.1 UV spectrum of compound 2
**Figure S2.2** IR spectrum of compound 2

**Figure S2.3** $^1$H NMR spectrum (600 MHz, DMSO-$d_6$) of compound 2
Figure S2.4 $^{13}$C NMR spectrum (150 MHz, DMSO-$d_6$) of compound 2

Figure S2.5 HMBC spectrum (600 MHz, DMSO-$d_6$) of compound 2
### Mass Spectrum Molecular Formula Report

**Analysis Info**
- **D:Data\20150402\cyanlee\SQ-25_1-c_01_4781.d**

**Method**
- 20131006_cyanlee.m

**Sample Name**
- SQ-25

**Comment**
- 

**Acquisition Date**
- 4/2/2015 2:44:13 PM

**Operator**
- microTOF-Q

**Instrument / Ser#**
- Bruker Customer 125

### Acquisiton Parameter

<table>
<thead>
<tr>
<th>Source Type</th>
<th>ESIC</th>
<th>Ion Polarity</th>
<th>Positive</th>
<th>Set Nebulizer</th>
<th>1.2 Bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus</td>
<td>Active</td>
<td>Set Capillary</td>
<td>4500 V</td>
<td>Set Dry Heater</td>
<td>180 °C</td>
</tr>
<tr>
<td>Scan Begin</td>
<td>50 m/z</td>
<td>Set End Plate Offset</td>
<td>-500 V</td>
<td>Set Dry Gas</td>
<td>8.0 l/min</td>
</tr>
<tr>
<td>Scan End</td>
<td>3000 m/z</td>
<td>Set Collision Cell RF</td>
<td>3000 V</td>
<td>Set Direct Valve</td>
<td>Source</td>
</tr>
</tbody>
</table>

### Generate Molecular Formula Parameter

<table>
<thead>
<tr>
<th>Formula, min.</th>
<th>C21H20O4Na</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula, max.</td>
<td></td>
</tr>
<tr>
<td>Measured m/z</td>
<td>361.141</td>
</tr>
<tr>
<td>Tolerance</td>
<td>5 ppm</td>
</tr>
<tr>
<td>Charge</td>
<td>1</td>
</tr>
<tr>
<td>Check Valence</td>
<td>Minimum: 0</td>
</tr>
<tr>
<td>Nitrogen Rule</td>
<td>Maximum: 0</td>
</tr>
<tr>
<td>Filler / C Ratio</td>
<td>Minimum: 0</td>
</tr>
<tr>
<td>Estimate Carbon</td>
<td>yes</td>
</tr>
</tbody>
</table>

---

![Figure S2.6 HRESIMS spectrum of compound 2](image)

**Figure S2.6 HRESIMS spectrum of compound 2**

![Figure S2.7 CD spectra of compound 2](image)

**Figure S2.7 CD spectra of compound 2**
Figure S3.1 UV spectrum of compound 3

Figure S3.2 IR spectrum of compound 3
Figure S3.3 $^1$H NMR spectrum (400 MHz, DMSO-$d_6$) of compound 3

Figure S3.4 $^{13}$C NMR spectrum (100 MHz, DMSO-$d_6$) of compound 3
Figure S3.5 HMBC spectrum (600 MHz, DMSO-$d_6$) of compound 3

Figure S3.6 HSQC spectrum (600 MHz, DMSO-$d_6$) of compound 3
### Figure S3.7 HRESIMS spectrum of compound 3

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis Name</td>
<td>D:\Data\20140312\xyang\SQ-14_2-b.3_01_2851.d</td>
</tr>
<tr>
<td>Method</td>
<td>Liu xiaojq.m</td>
</tr>
<tr>
<td>Sample Name</td>
<td>SQ-14</td>
</tr>
<tr>
<td>Comment</td>
<td></td>
</tr>
<tr>
<td>Acquisition Date</td>
<td>3/12/2014 6:51:39 PM</td>
</tr>
<tr>
<td>Operator</td>
<td>Bruker Customer</td>
</tr>
<tr>
<td>Instrument / Ser#</td>
<td>microTOF-Q</td>
</tr>
<tr>
<td>Source Type</td>
<td>EI+</td>
</tr>
<tr>
<td>Ion Polarity</td>
<td>Positive</td>
</tr>
<tr>
<td>Scan Begin</td>
<td>5000 m/z</td>
</tr>
<tr>
<td>Scan End</td>
<td>1000 m/z</td>
</tr>
<tr>
<td>Set Collison Cell RF</td>
<td>300.0 Vpp</td>
</tr>
<tr>
<td>Source</td>
<td></td>
</tr>
<tr>
<td>Tolerance</td>
<td>5 ppm</td>
</tr>
<tr>
<td>Charge</td>
<td>1</td>
</tr>
<tr>
<td>Nitrogen Rule</td>
<td>no</td>
</tr>
<tr>
<td>Electron Configuration both</td>
<td>no</td>
</tr>
<tr>
<td>Estimate Carbon</td>
<td>yes</td>
</tr>
</tbody>
</table>

![HRESIMS spectrum of compound 3](image)

### Figure S3.8 CD spectra of compound 3

![CD spectra of compound 3](image)
Figure S4.1 UV spectrum of compound 4

Figure S4.2 IR spectrum of compound 4
Figure S4.3 $^1$H NMR spectrum (600 MHz, DMSO-$d_6$) of compound 4

Figure S4.4 $^{13}$C NMR spectrum (150 MHz, DMSO-$d_6$) of compound 4
Figure S4.5 HMBC spectrum (600 MHz, DMSO-\(d_6\)) of compound 4

Mass Spectrum Molecular Formula Report

Analysis info: D:\Data\20151017\ceyang\SQ-34_1-c2_01_4520.d
Analysis Name: 20131026ceyang.m
Sample Name: SQ-34
Method: micOTOF-Q
Comment: Bruker Customer 125

Acquisition Parameter
Source Type: ESI
Focus: Active
Scan Begin: 50 m/z
Scan End: 3000 m/z

Ion Polarity: Positive
Set Capillary: 4500 V
Set End Plate Offset: -500 V
Set Collision Cell RF: 900.0 Vpp
Set Nebulizer: 1.2 Bar
Set Dry Heater: 180 °C
Set Dry Gas: 8.6 l/min
Set Divert Valve: Source

Mass Formula:
Formula, m/z: C_{26}H_{33}O_{10}Na
Measured m/z: 445.199
Tolerance: 5 ppm
Charge: 1

Intensities

Figure S4.6 HRESIMS spectrum of compound 4
Figure S4.7 CD spectra of compound 4

Figure S5.1 UV spectrum of compound 5
Figure S5.2 IR spectrum of compound 5

Figure S5.3 $^1$H NMR spectrum (600 MHz, CD$_3$OD-$d_4$) of compound 5
Figure S5.4 $^{13}$C NMR spectrum (150 MHz, CD$_3$OD-$d_4$) of compound 5

Figure S5.5 HMBC spectrum (600 MHz, CD$_3$OD-$d_4$) of compound 5
Figure S5.6 HSQC spectrum (600 MHz, CD$_3$OD-$d_4$) of compound 5

Figure S5.7 HRESIMS spectrum of compound 5
Figure S5.8 CD spectra of compound 5

Figure S6.1 UV spectrum of compound 6
**Figure S6.2** IR spectrum of compound 6

**Figure S6.3** $^1$H NMR spectrum (600 MHz, DMSO-$d_6$) of compound 6
Figure S6.4 $^{13}$C NMR spectrum (150 MHz, DMSO-$d_6$) of compound 6

Figure S6.5 HMBC spectrum (600 MHz, DMSO-$d_6$) of compound 6
Figure S6.6 HSQC spectrum (600 MHz, DMSO-$d_6$) of compound 6

Figure S6.7 HRESIMS spectrum of compound 6
Figure S6.8 CD spectra of compound 6

Figure S7.1 UV spectrum of compound 7
Figure S7.2 IR spectrum of compound 7

Figure S7.3 $^1$H NMR spectrum (300 MHz, CDCl$_3$) of compound 7
**Figure S7.4** $^{13}$C NMR spectrum (75 MHz, CDCl$_3$) of compound 7

**Figure S7.5** HMBC spectrum (600 MHz, CDCl$_3$) of compound 7
Figure S7.6 HSQC spectrum (600 MHz, CDCl₃) of compound 7

Figure S7.7 HRESIMS spectrum of compound 7
Figure S7.8 CD spectra of compound 7

Figure S8.1 UV spectrum of compound 8
Figure S8.2 IR spectrum of compound 8

Figure S8.3 $^1$H NMR spectrum (300 MHz, CDCl$_3$) of compound 8
Figure S8.4 $^{13}$C NMR spectrum (75 MHz, CDCl$_3$) of compound 8

Figure S8.5 HMBC spectrum (600 MHz, CDCl$_3$) of compound 8
Figure S8.6 HSQC spectrum (600 MHz, CDCl$_3$) of compound 8

Figure S8.7 HRESIMS spectrum of compound 8
Figure S8.8 CD spectra of compound 8

Figure S9.1 UV spectrum of compound 9
Figure S9.2 IR spectrum of compound 9

Figure S9.3 $^1$H NMR spectrum (300 MHz, DMSO-$d_6$) of compound 9
Figure S9.4 $^{13}$C NMR spectrum (150 MHz, DMSO-$d_6$) of compound 9

Figure S9.5 HMBC spectrum (600 MHz, DMSO-$d_6$) of compound 9
**Figure S9.6** HSQC spectrum (600 MHz, DMSO-$d_6$) of compound 9

**Figure S9.7** HRESIMS spectrum of compound 9
**Figure S9.8** CD spectra of compound 9

**Figure S10.1** UV spectrum of compound 10
Figure S10.2 IR spectrum of compound 10

Figure S10.3 $^1$H NMR spectrum (300 MHz, DMSO-$d_6$) of compound 10
Figure S10.4 $^{13}$C NMR spectrum (150 MHz, DMSO-$d_6$) of compound 10

Figure S10.5 HMBC spectrum (600 MHz, DMSO-$d_6$) of compound 10
Figure S10.6 HSQC spectrum (600 MHz, DMSO-$d_6$) of compound 10

Figure S10.7 HRESIMS spectrum of compound 10
**Figure S10.8** CD spectra of compound 10

**Figure S11.1** UV spectrum of compound 11
Figure S11.2 IR spectrum of compound 11

Figure S11.3 $^1$H NMR spectrum (400 MHz, DMSO-$d_6$) of compound 11
Figure S11.4 $^{13}$C NMR spectrum (100 MHz, DMSO-$d_6$) of compound 11

Figure S11.5 HMBC spectrum (600 MHz, DMSO-$d_6$) of compound 11
Figure S11.6 HRESIMS spectrum of compound 11

Figure S11.7 CD spectra of compound 11
Figure S12.1 UV spectrum of compound 12

Figure S12.2 IR spectrum of compound 12
Figure S12.3 $^1$H NMR spectrum (300 MHz, CD$_3$OD-$d_4$) of compound 12

Figure S12.4 $^{13}$C NMR spectrum (150 MHz, CD$_3$OD-$d_4$) of compound 12
Figure S12.5 HMBC spectrum (600 MHz, CD$_3$OD-$d_4$) of compound 12

Figure S12.6 HSQC spectrum (600 MHz, CD$_3$OD-$d_4$) of compound 12
Figure S12.7 HRESIMS spectrum of compound 12

Figure S12.8 CD spectra of compound 12
Figure S13.1 UV spectrum of compound 13

<table>
<thead>
<tr>
<th>No.</th>
<th>P/V</th>
<th>Wavelength</th>
<th>Abs.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>396.00</td>
<td>.066</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>370.00</td>
<td>.077</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>330.00</td>
<td>.160</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>323.50</td>
<td>.177</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>321.40</td>
<td>.175</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>314.80</td>
<td>.162</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>263.00</td>
<td>.208</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>296.60</td>
<td>.376</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>213.20</td>
<td>1.371</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>370.00</td>
<td>.079</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>339.00</td>
<td>.171</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>322.20</td>
<td>.171</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>315.80</td>
<td>.158</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>298.40</td>
<td>.131</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>272.00</td>
<td>.171</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>240.40</td>
<td>.208</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td>212.80</td>
<td>1.208</td>
<td></td>
</tr>
</tbody>
</table>

Figure S13.2 IR spectrum of compound 13
Figure S13.3 $^1$H NMR spectrum (400 MHz, DMSO-$d_6$) of compound 13

Figure S13.4 $^{13}$C NMR spectrum (100 MHz, DMSO-$d_6$) of compound 13
Figure S13.5 HMBC spectrum (600 MHz, DMSO-$d_6$) of compound 13

Figure S13.6 HRESIMS spectrum of compound 13
Figure S13.7 CD spectra of compound 13
Figure S14 Key HMBC correlations of new compounds daphnegiravans A–M (1–13)
Figure S15 The flow cytometry histograms in Hep3B cells after treatment with compounds 3, 9-12 at the indicated concentrations for 48 h. The experiments were performed three times and the results of representative experiments are shown.

Figure S16 The AV–FITC binding and PI staining flow cytometry histograms in Hep3B cells after treatment with compound 12 at the indicated concentrations for 48 h. The experiments were performed three times and the results of representative experiments are shown.
Figure S17 The ROS level flow cytometry histograms in Hep3B cells after treatment with compounds 9 and 12 for 48 h. The experiments were performed three times.

NMR data of known compounds

**(2S)-7, 4'-dihydroxy-3'-prenylflavan (14).** Brown powder; CD (MeOH) nm (Δε) 221 (-3.19), 284 (-0.96); HRESIMS m/z 333.1465 [M+Na]+ (caled for C_{20}H_{22}O_{3}Na, 333.1461); 1H NMR (400 MHz, CD_{3}OD): δ 4.83 (1H, dd, J = 9.6, 2.2 Hz, H-2), 2.03, 1.94 (each 1H, m, H-3), 2.80, 2.61 (each 1H, m, H-4), 6.83 (1H, d, J = 8.2 Hz, H-5), 6.31 (1H, dd, J= 8.2, 1.6 Hz, H-6), 6.25 (1H, d, J = 1.6 Hz, H-8), 7.06 (1H, d, J = 1.8 Hz, H-2'), 6.74 (1H, d, J = 8.0 Hz, H-5'), 7.02 (1H, dd, J = 8.0, 1.8 Hz, H-6'), 3.28 (2H, d, J = 7.2 Hz, H-1''), 5.30 (1H, m, H-2''), 1.68 (3H, s, Me-4''), 1.71 (3H, s, Me-5''); 13C NMR (100 MHz, CD_{3}OD): δ 79.1 (C-2), 31.2 (C-3), 25.4 (C-4), 130.9 (C-5), 109.0 (C-6), 157.5 (C-7), 104.0 (C-8), 157.2 (C-9), 114.3 (C-10), 134.0 (C-1'), 128.5 (C-2'), 129.1 (C-3'), 155.7 (C-4'), 115.6 (C-5'), 125.6 (C-6'), 29.3 (C-1''), 123.9 (C-2''), 133.0 (C-3''), 17.8 (C-4''), 25.9 (C-5'').

**(2S)-kazinol I (15).** Brown oil; CD (MeOH) nm (Δε) 220 (-3.02), 285 (-0.88); HRESIMS m/z 417.2043 [M+Na]+ (caled for C_{25}H_{30}O_{4}Na, 417.2036); 1H NMR (400MHz, DMSO-d_{6}): δ 4.93 (1H, d, J = 10.1 Hz, H-2), 1.98, 1.78 (each 1H, m, H-3), 2.78, 2.63 (each 1H, m, H-4), 6.86 (1H, d, J = 8.1 Hz, H-5), 6.27 (1H, d, J = 8.1 Hz, H-6), 6.15 (1H, brs, H-8), 6.73 (1H, s, H-2'), 3.24 (2H, m, H-1''), 5.01 (1H, t, J = 6.6 Hz, H-2''), 1.63 (3H, s, H-4''), 1.69 (3H, s, H-5''), 3.17 (2H, m, H-1''''), 4.94 (1H, o, H-2''''), 1.63 (6H, s, H-4'''', H-5''''); 13C NMR (100MHz, DMSO-d_{6}): δ 74.3 (C-2), 29.5 (C-3), 24.6 (C-4), 129.8 (C-5), 107.9 (C-6), 156.4 (C-7), 102.7 (C-8), 155.9 (C-9), 112.1 (C-10), 129.9 (C-1''), 110.8 (C-2'''), 142.8 (C-3''), 142.7 (C-4''), 126.7 (C-5''), 126.7 (C-5'').
127.8 (C-6'), 26.6 (C-1'''), 124.4 (C-2'''), 129.7 (C-3'''), 17.7 (C-4''''), 25.4 (C-5''''), 25.1 (C-1''''), 123.8 (C-2''''), 129.8 (C-3''''), 17.7 (C-4''''), 25.4 (C-5'''').

**(2S)-7, 4'-dihydroxyflavane (16).** Yellowish crystal; CD (MeOH) nm (Δε) 222 (-2.71), 285 (-0.73); HRESIMS m/z 265.0847 [M+Na]^+ (calcd for C_{15}H_{14}O_3Na, 265.0841); ^1H NMR (300 MHz, CD_3OD): δ 4.90 (1H, dd, J = 10.5, 2.7 Hz, H-2), 2.10, 2.01 (each 1H, m, H-3), 2.88, 2.67 (each 1H, m, H-4), 6.86 (1H, d, J=8.1 Hz, H-5), 6.31 (1H, dd, J = 8.1, 2.4 Hz, H-6), 6.25 (1H, d, J = 2.4 Hz, H-8), 7.23 (2H, d, J = 8.4 Hz, H-2', 6').

**(2S)-7, 4'-dihydroxy-3'-methoxyflavan (17)** Yellowish powder; CD (MeOH) nm (Δε) 220 (-3.29), 288 (-0.95); HRESIMS m/z 295.0946 [M+Na]^+ (calcd for C_{16}H_{16}O_4Na, 295.0941); ^1H NMR (300 MHz, CD_3OD): δ 4.88 (1H, dd, J = 9.9, 2.4 Hz, H-2), 2.09, 2.00 (each 1H, m, H-3), 2.84, 2.63 (each 1H, m, H-4), 6.85 (1H, d, J = 8.1 Hz, H-5), 6.31 (1H, dd, J = 8.1, 2.4 Hz, H-6), 6.26 (1H, d, J = 2.4 Hz, H-8), 6.97 (1H, d, J = 1.8 Hz, H-2'), 6.78 (1H, d, J = 8.1 Hz, H-5'), 6.84 (1H, dd, J = 8.1, 1.8 Hz, H-6'), 3.84 (3H, s, OMe-3'); ^13C NMR (75 MHz, CD_3OD): δ 79.2 (C-2), 31.4 (C-3), 25.5 (C-4), 131.0 (C-5), 109.1 (C-6), 157.5 (C-7), 104.0 (C-8), 157.1 (C-9), 114.3 (C-10), 134.9 (C-1'), 110.9 (C-2'), 148.9 (C-3'), 147.2 (C-4'), 116.0 (C-5'), 119.9 (C-6'), 56.4 (OMe-3').

**(2S)-7, 3'-dihydroxy-4'-methoxyflavan (18)** Yellowish powder; CD (MeOH) nm (Δε) 220 (-2.67), 288 (-0.87); HRESIMS m/z 295.0945 [M+Na]^+ (calcd for C_{16}H_{16}O_4Na, 295.0941); ^1H NMR (300 MHz, CD_3OD): δ 4.86 (1H, dd, J = 9.9, 2.4 Hz, H-2), 2.09, 1.95 (each 1H, m, H-3), 2.83, 2.61 (each 1H, m, H-4), 6.84 (1H, d, J = 8.1 Hz, H-5), 6.31 (1H, dd, J = 8.1, 2.4 Hz, H-6), 6.26 (1H, d, J = 2.4 Hz, H-8), 6.85 (1H, d, J = 1.8 Hz, H-2'), 6.87 (1H, d, J = 8.1 Hz, H-5'), 6.81 (1H, dd, J = 8.1, 1.8 Hz, H-6'), 3.83 (3H, s, OMe-4'); ^13C NMR (75 MHz, CD_3OD): δ 78.8 (C-2), 31.4 (C-3), 25.3 (C-4), 130.9 (C-5), 109.0 (C-6), 157.5 (C-7), 104.0 (C-8), 157.0 (C-9), 114.3 (C-10), 136.3 (C-1'), 112.5 (C-2'), 147.4 (C-3'), 148.5 (C-4'), 114.2 (C-5'), 118.5 (C-6'), 56.3 (OMe-4').
**(2S)-3', 4'-dimethoxy-7-hydroxyflavan** (19). Brown oil; CD (MeOH) nm (Δε) 220 (-2.89), 286 (-0.85); HRESI-MS m/z 309.1097 [M+Na]+ (calcd for C_{17}H_{18}O_4Na, 309.1097). 1H NMR (400 MHz, DMSO-d_6): δ 4.94 (1H, dd, J = 9.9, 2.1 Hz, H-2), 2.06, 1.95 (each 1H, m, H-3), 2.80, 2.60 (each 1H, m, H-4), 6.85 (1H, d, J = 8.2 Hz, H-5), 6.29 (1H, dd, J = 8.2, 2.4 Hz, H-6), 6.20 (1H, d, J = 2.4 Hz, H-8), 6.93 (2H, o, H-2', 5'), 6.99 (1H, brs, H-6'), 3.75 (3H, s, OMe-3'), 3.74 (3H, s, OMe-4'); 13C NMR (100 MHz, DMSO-d_6): δ 76.8 (C-2), 29.4 (C-3), 23.8 (C-4), 129.8 (C-5), 108.0 (C-6), 156.5 (C-7), 102.8 (C-8), 155.5 (C-9), 112.1 (C-10), 134.1 (C-1'), 111.6 (C-2'), 148.3 (C-3'), 148.6 (C-4'), 118.3 (C-5'), 111.0 (C-6'), 55.5 (OMe-3'), 55.4 (OMe-4').

**(2S)-4'-hydroxy-7-methoxyflavan** (20). Brown oil; CD (MeOH) nm (Δε) 220 (-2.74), 286 (-0.79); HRESI-MS m/z 257.1168 [M+H]+ (calcd for C_{16}H_{17}O_3, 257.1172); 1H NMR (400MHz, DMSO-d_6): δ 4.93 (1H, dd, J = 10.1, 2.0 Hz, H-2), 2.06, 1.94 (each 1H, m, H-3), 2.84, 2.64 (each 1H, m, H-4), 6.97 (1H, d, J = 8.4 Hz, H-5), 6.43 (1H, dd, J = 8.4, 2.4 Hz, H-6), 6.36 (1H, J = 2.4 Hz, H-8), 7.21 (2H, d, J = 8.5 Hz, H-2', 6'), 6.76 (2H, d, J = 8.5 Hz, H-3', 5'); 13C NMR (100MHz, DMSO-d_6): δ 77.0 (C-2), 29.1 (C-3), 23.9 (C-4), 129.9 (C-5), 106.9 (C-6), 158.5 (C-7), 101.2 (C-8), 155.7 (C-9), 113.8 (C-10), 131.6 (C-1'), 127.5 (C-2', 6'), 115.0 (C-3', 5'), 157.1 (C-4').

**(2S)-7, 3'-dimethoxy-4'-hydroxyflavan** (21). Brown oil; CD (MeOH) nm (Δε) 221 (-2.37), 286 (-0.80); HRESI-MS m/z 309.1095 [M+Na]+ (calcd for C_{17}H_{18}O_4Na, 309.1097); 1H NMR (400MHz, DMSO-d_6): δ 4.93 (1H, dd, J = 9.0, 2.0 Hz, H-2), 2.06, 1.90 (each 1H, m, H-3), 2.83, 2.62 (each 1H, m, H-4), 6.97 (1H, d, J = 8.3 Hz, H-5), 6.43 (1H, dd, J = 8.3, 2.5 Hz, H-6), 6.36 (1H, J = 2.5 Hz, H-8), 6.83 (1H, d, J = 2.0 Hz, H-2'), 6.90 (1H, d, J = 8.2 Hz, H-5'), 6.78 (1H, dd, J = 8.2, 2.0 Hz, H-6'); 13C NMR (100MHz, DMSO-d_6): δ 76.8 (C-2), 29.3 (C-3), 23.7 (C-4), 129.9 (C-5), 106.8 (C-6), 158.6 (C-7), 101.2 (C-8), 155.5 (C-9), 113.8 (C-10), 134.1 (C-1'), 111.9 (C-2'), 147.2 (C-3'), 146.4 (C-4'), 113.4 (C-5'), 116.9 (C-6').