# Supplementary materials

## Contents

**NMR parameters and spectra of the compound 1-9 identified from *P. clematidea* extract**

**Table S1:** NMR data of compound **1** identified from *P. clematidea* extract in $CD_3OD$

| Position | $^{13}$C-NMR (150 MHz) | $^{1}$H-NMR (600 MHz) | HMBC ($^{1}$H → $^{13}$C) |
|---|---|---|---|
| 2 | 166.3 | | |
| 3 | 103.9 | 6.59 (1H, s) | C-2,4,10,1′ |
| 4 | 184.0 | | |
| 5 | 163.3 | | |
| 6 | 100.2 | 6.21 (1H, d, 2.1 Hz) | C-5,7,8,10 |
| 7 | 166.2 | | |
| 8 | 95.1 | 6.45 (1H, d, 2.1 Hz) | C-6,7, 9,10 |
| 9 | 159.5 | | |
| 10 | 107.7 | | |
| 1′ | 123.3 | | |
| 2′ | 129.5 | 7.85 (2H, d, 8.8 Hz) | C-2,4′,6′ |
| 3′ | 117.1 | 6.93 (2H, d, 8.8 Hz) | C-1′,4′,5′ |
| 4′ | 162.8 | | |
| 5′ | 117.1 | 6.93 (2H, d, 8.8 Hz) | C-1′,3′,4′ |
| 6′ | 129.5 | 7.85 (2H, d, 8.8 Hz) | C-2,2′,4′ |

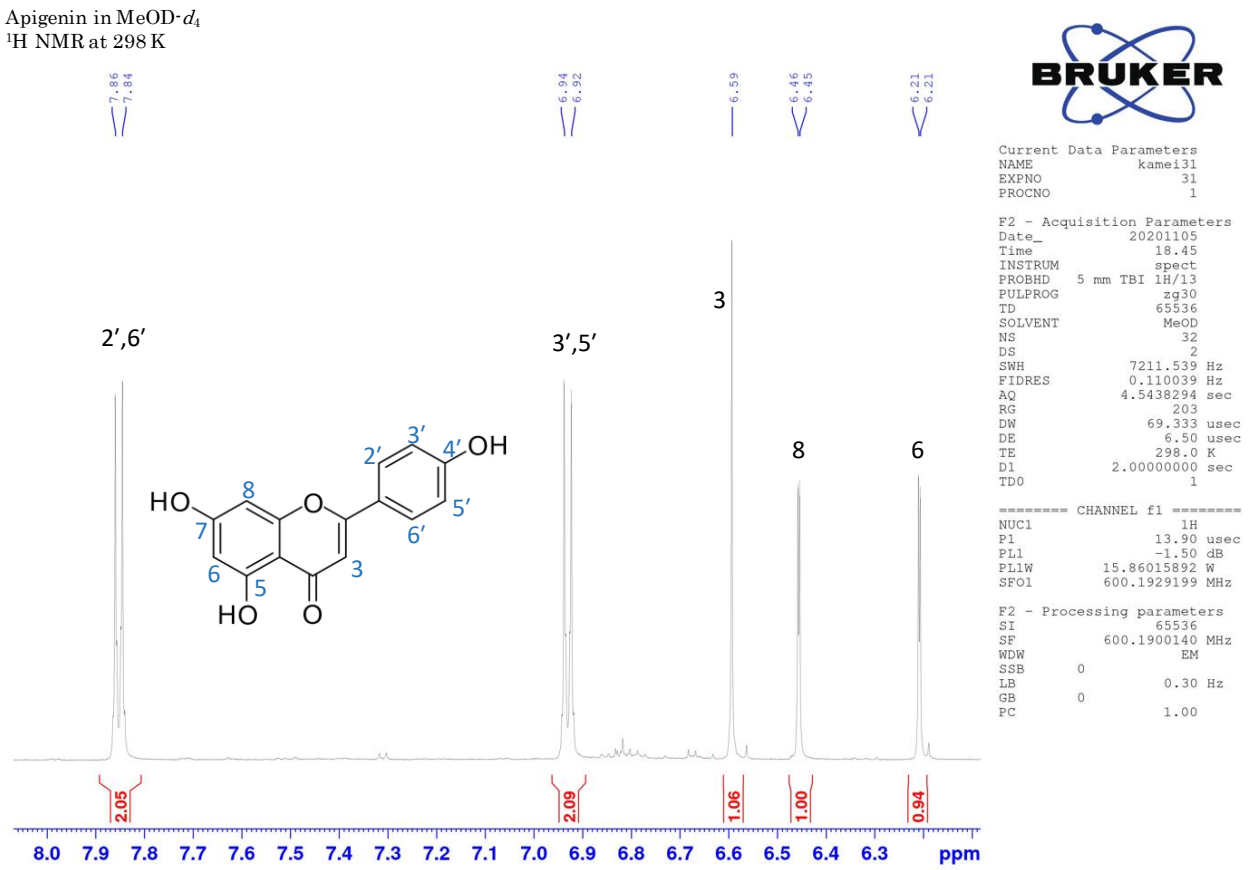



**Figure S1:** Full assignment $^{1}$H NMR spectrum of compound **1** recorded in $CD_3OD$

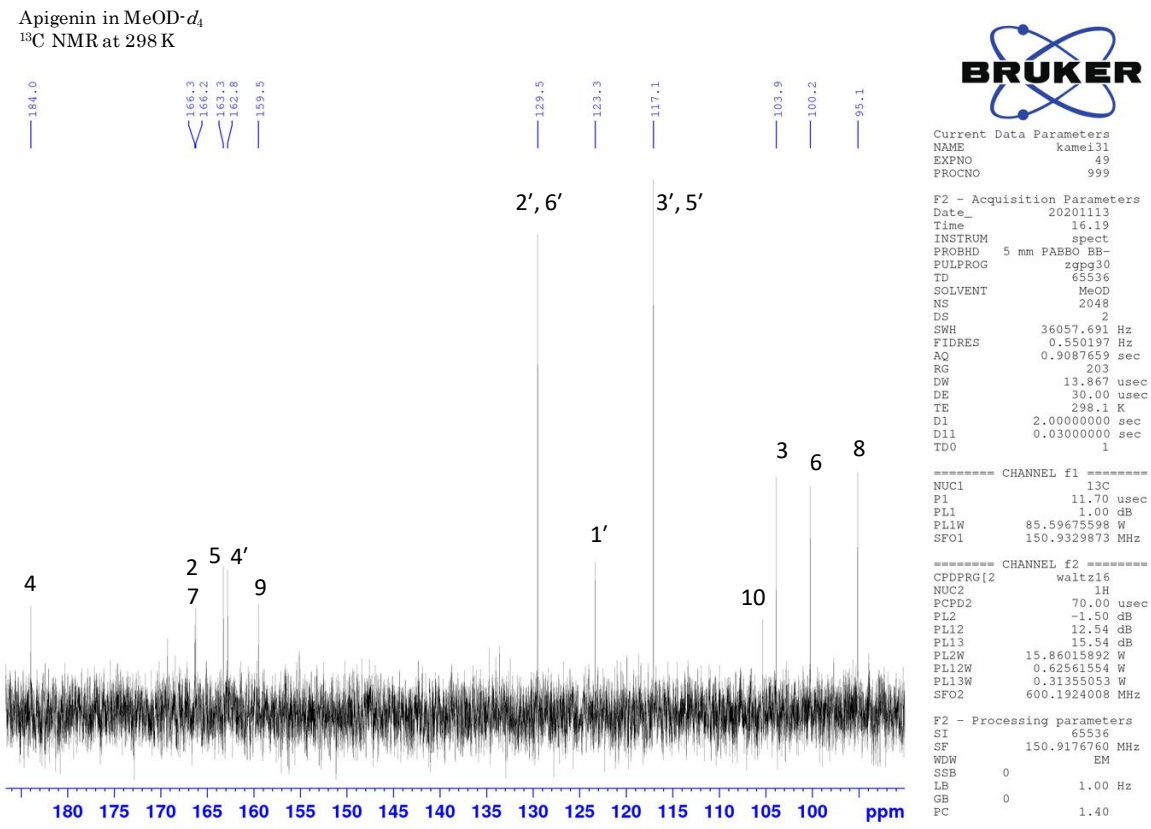



**Figure S2:** Full assignment $^{13}$C NMR spectrum of compound **1** recorded in $CD_3OD$

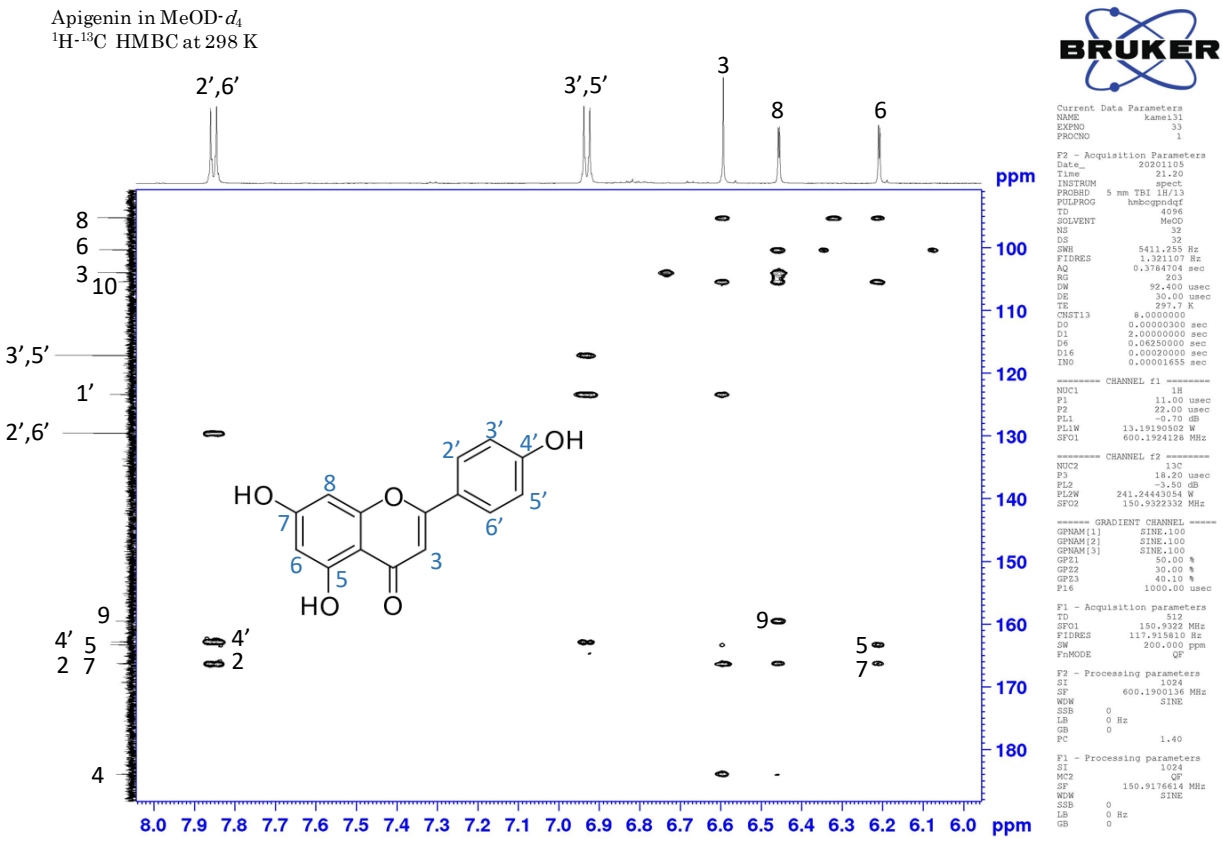



**Figure S3:** $^{1}$H-$^{13}$C HMBC spectrum of compound **1** recorded in $CD_3OD$

**Table S2:** NMR data of compound **2** identified from *P. clematidea* extract in $CD_3OD$

| **Position** | **$^{13}$C-NMR** (150 MHz) | **$^{1}$H-NMR** (600 MHz) | **HMBC** ($^{1}H \rightarrow {}^{13}C$) |
|---|---|---|---|
| 1 (1′, 1") | 153.5 | | |
| 2 (2′, 2") | 116.8 | 6.65 (6H, d, 8.7 Hz) | C-1,3,4,6 |
| 3 (3′, 3") | 126.0 | 6.79 (6H, d, 8.7 Hz) | C-1,2,4,5 |
| 4 (4′, 4") | 142.9 | | |
| 5 (5′, 5") | 126.0 | 6.79 (6H, d, 8.7 Hz) | C-1,3,4,6 |
| 6 (6′, 6") | 116.8 | 6.65 (6H, d, 8.7 Hz) | C-1,2,4,5 |

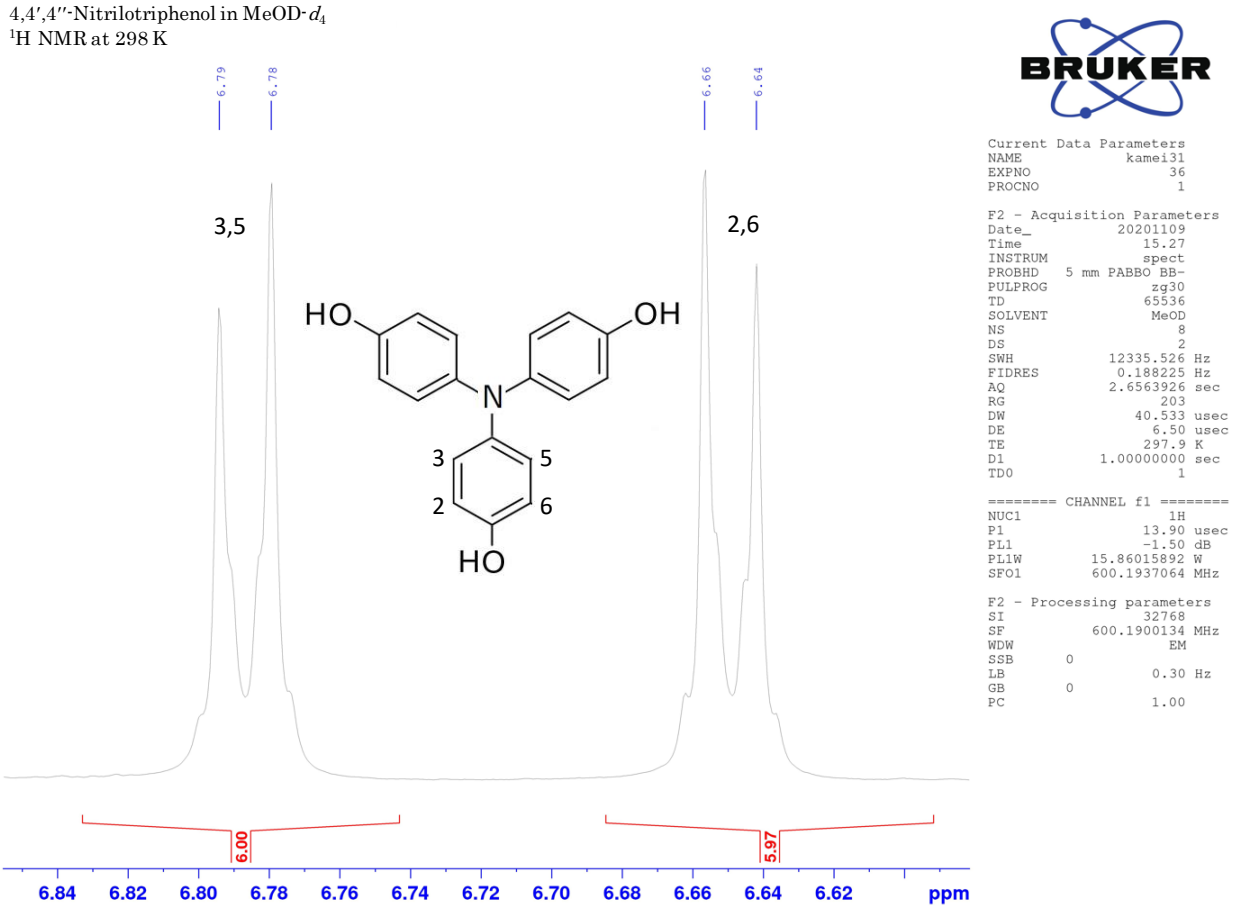



**Figure S4:** Full assignment $^{1}$H NMR spectrum of compound **2** recorded in $CD_3OD$

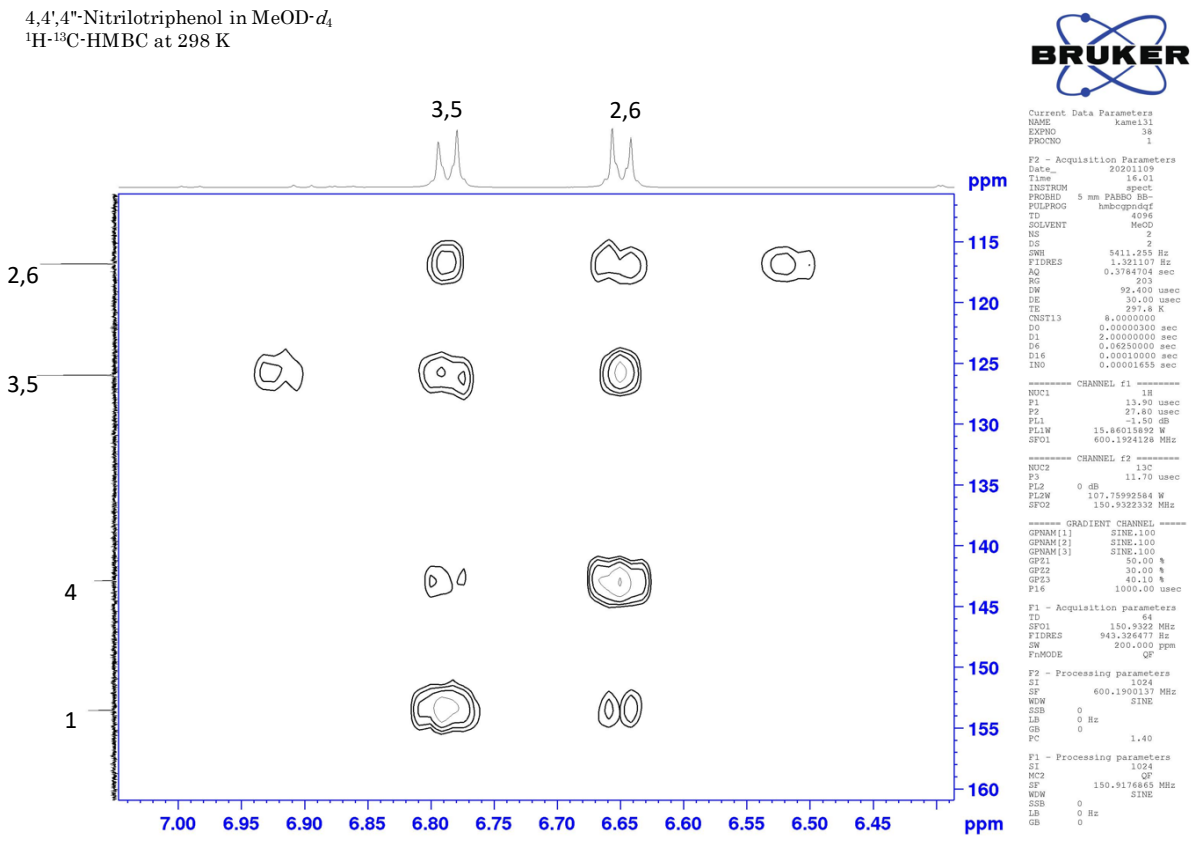



**Figure S5:** $^1$H-$^{13}$C HMBC spectrum of compound **2** recorded in $CD_3OD$

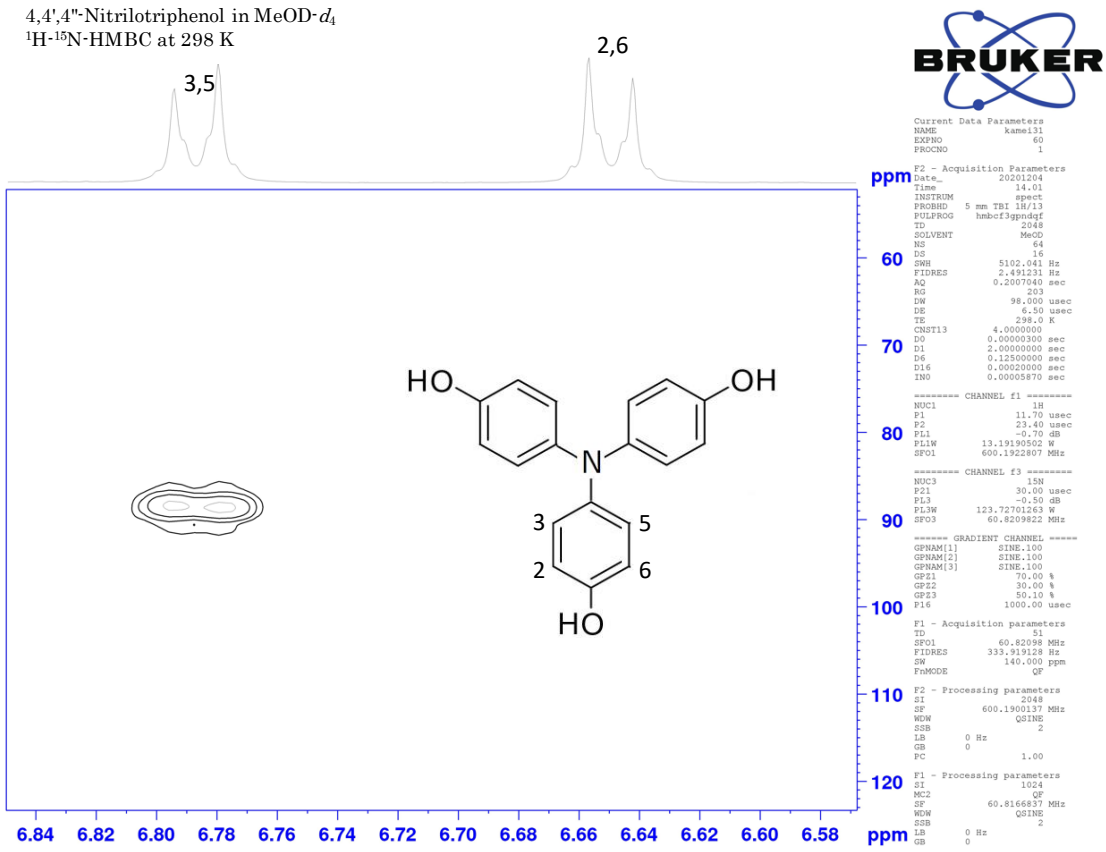



**Figure S6:** $^1$H-$^{15}$N HMBC spectrum of compound **2** recorded in $CD_3OD$

**Table S3:** NMR data of compound **3** identified from *P. clematidea* extract in $CD_3OD$

| Position | $^{13}$C-NMR (150 MHz) | $^{1}$H-NMR (600 MHz) | HMBC ($^{1}H \rightarrow {}^{13}C$) |
|---|---|---|---|
| 2 | 166.4 | | |
| 3 | 103.9 | 6.53 (1H, s) | C-2,4,10,1′ |
| 4 | 183.9 | | |
| 5 | 163.3 | | |
| 6 | 100.2 | 6.20 (1H, d, 1.5 Hz) | C-5,7,8,10 |
| 7 | 166.1 | | |
| 8 | 95.0 | 6.43 (1H, d, 1.5 Hz) | C-2,3,6,9,10 |
| 9 | 159.5 | | |
| 10 | 105.3 | | |
| 1′ | 123.7 | | |
| 2′ | 114.2 | 7.37 (1H, s) | C-2, 3′,4′,6′ |
| 3′ | 147.1 | | |
| 4′ | 151.0 | | |
| 5′ | 116.8 | 6.90 (1H, d, 8.6 Hz) | C-1′,3′,4′ |
| 6′ | 120.3 | 7.38 (1H, dd, 8.6, 1.5 Hz) | C-2,2′,4′ |

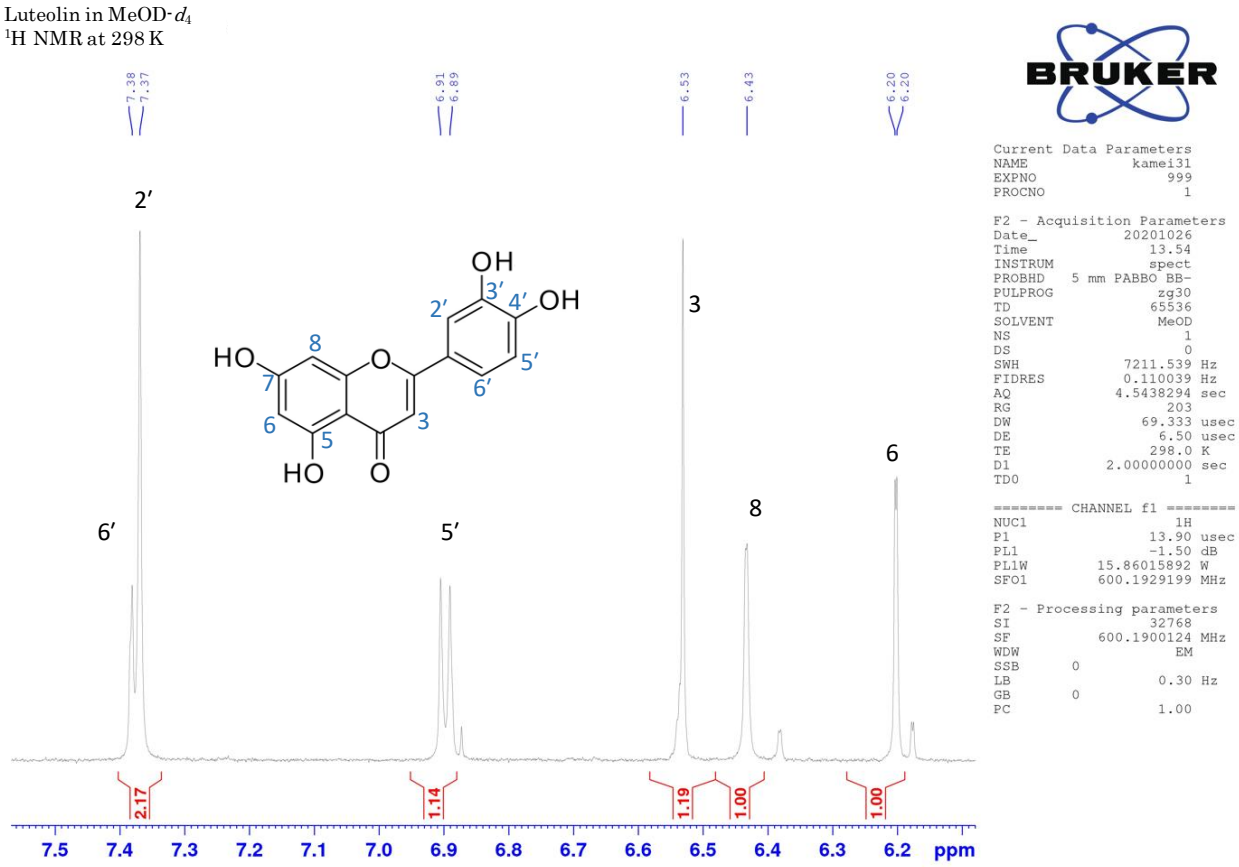



**Figure S7:** Full assignment $^{1}$H NMR spectrum of compound **3** recorded in $CD_3OD$

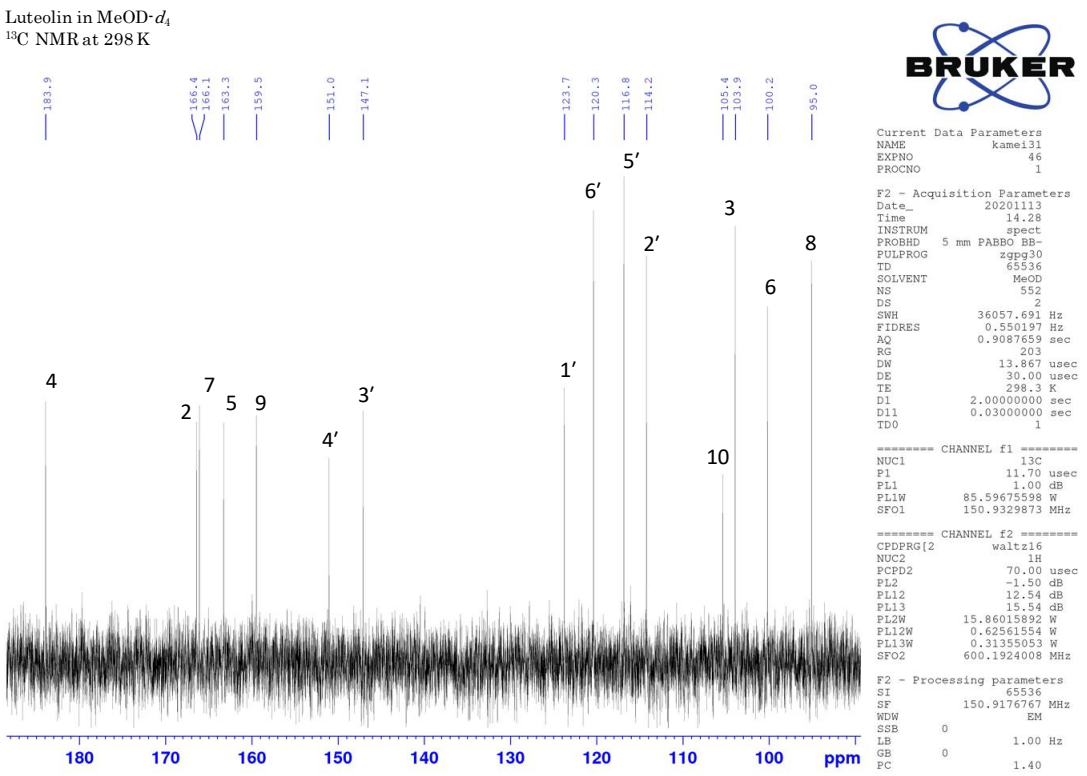



**Figure S8:** $^{13}$C NMR spectrum of compound **3** recorded in $CD_3OD$

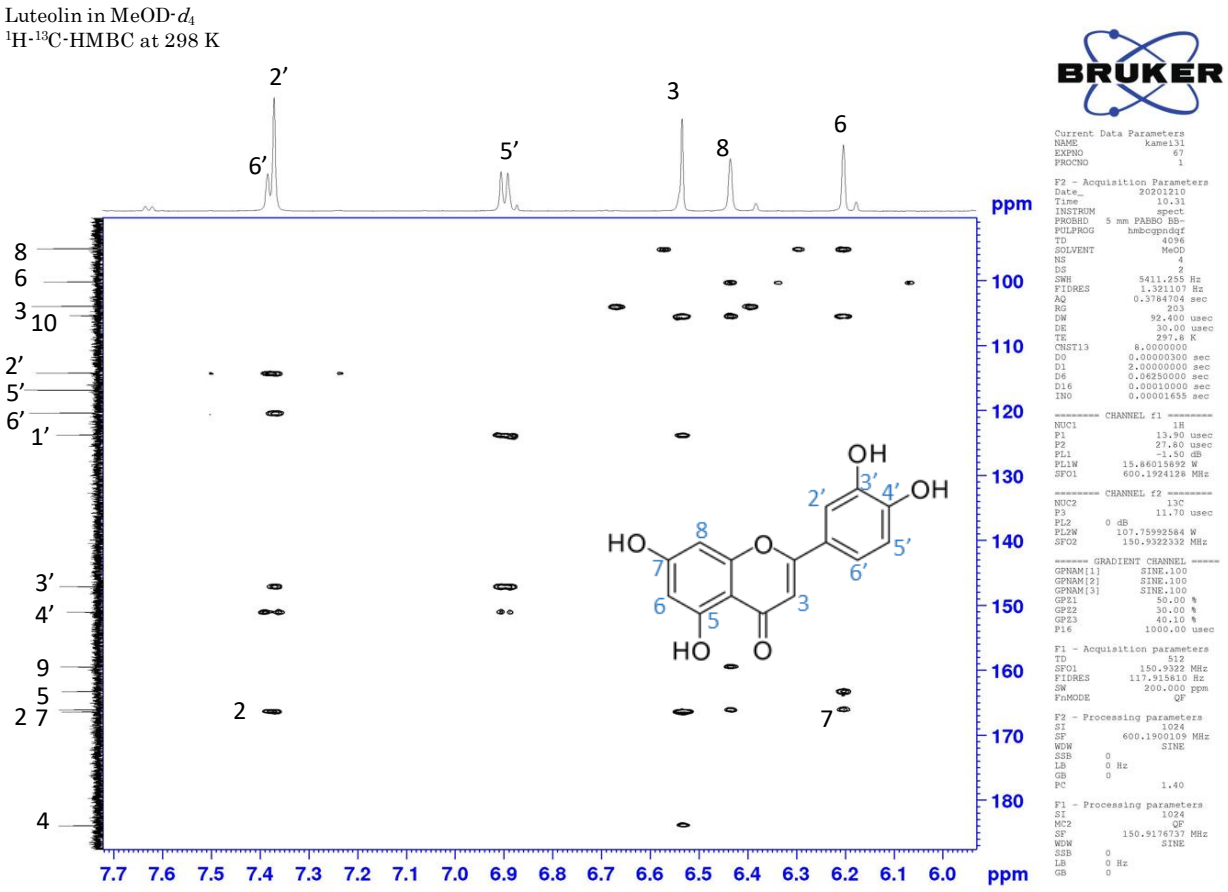



**Figure S9:** $^{1}$H-$^{13}$C HMBC spectrum of compound **3** recorded in $CD_3OD$

**Table S4:** NMR data of compound **4** identified from *P. clematidea* extract in $CD_3OD$

| Position | $^{13}$C-NMR (150 MHz) | $^{1}$H-NMR (600 MHz) | HMBC ($^{1}$H → $^{13}$C) |
|---|---|---|---|
| 2 | 158.1 | | |
| 3 | 139.6 | | |
| 4 | 180.1 | | |
| 5 | 163.2 | | |
| 6 | 99.8 | 6.20 (1H, d, 2.0 Hz) | C-5,7,8,10 |
| 7 | 166.1 | | |
| 8 | 94.8 | 6.40 (1H, d, 2.2 Hz) | C-6,7,9,10 |
| 9 | 158.5 | | |
| 10 | 105.9 | | |
| 1′ | 123.0 | | |
| 2′ | 116.5 | 7.62 (1H, d, 2.2 Hz) | C-2, 3′,4′,6′ |
| 3′ | 146.5 | | |
| 4′ | 150.0 | | |
| 5′ | 116.5 | 6.90 (1H, d, 8.5 Hz) | C-1′,3′,4′ |
| 6′ | 122.4 | 7.53 (1H, dd 8.5, 2.2 Hz) | C-2,2′,4′ |
| 3-O-Me | 60.6 | 3.78 | C-3 |

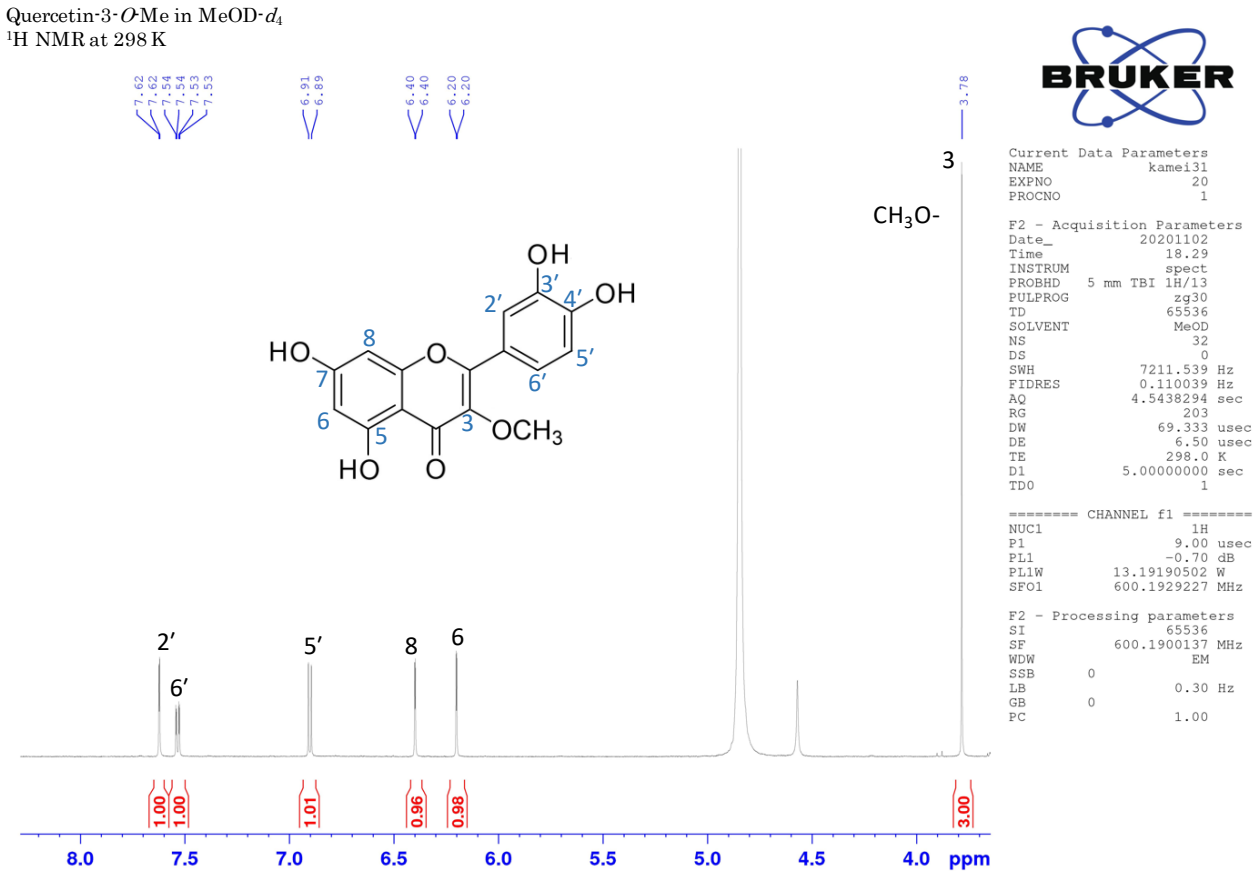



**Figure S10:** Full assignment $^{1}$H NMR spectrum of compound **4** recorded in $CD_3OD$

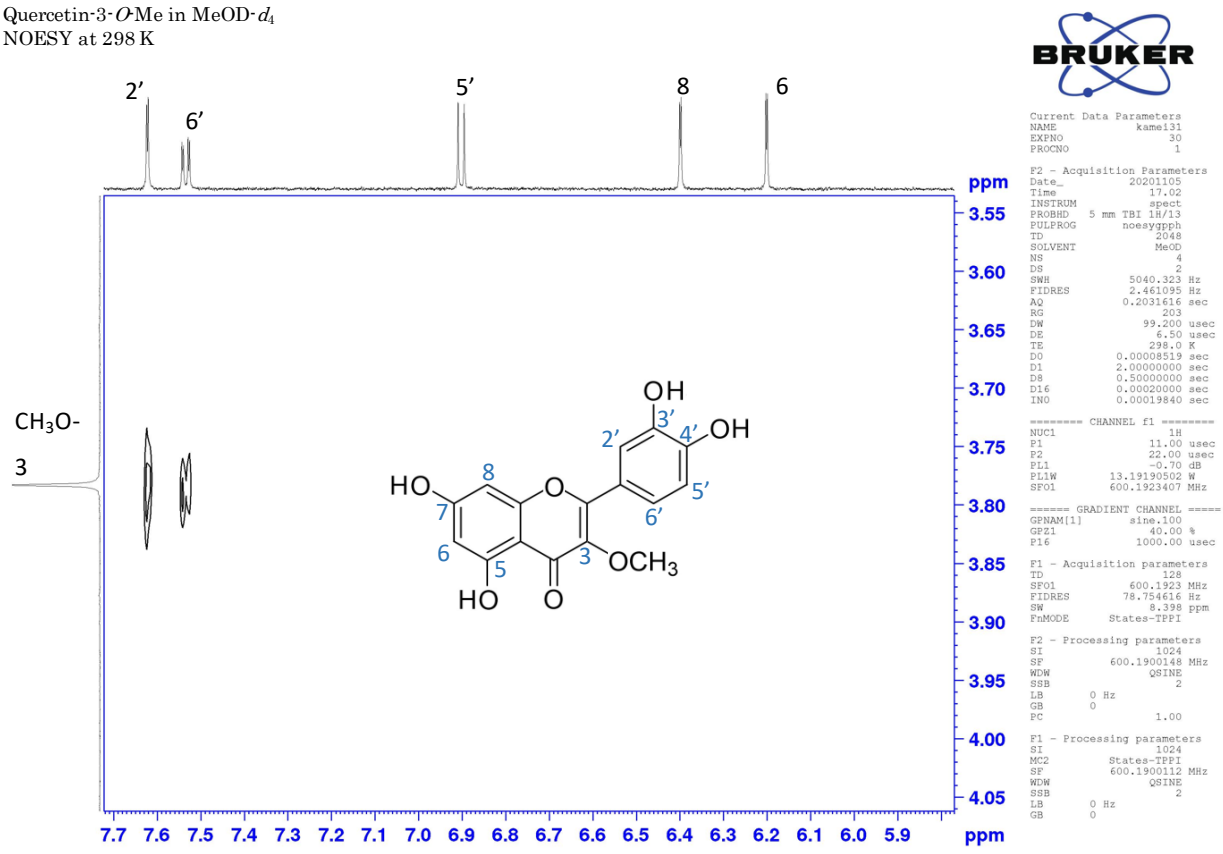



**Figure S11:** NOESY spectrum of compound **4** recorded in $CD_3OD$

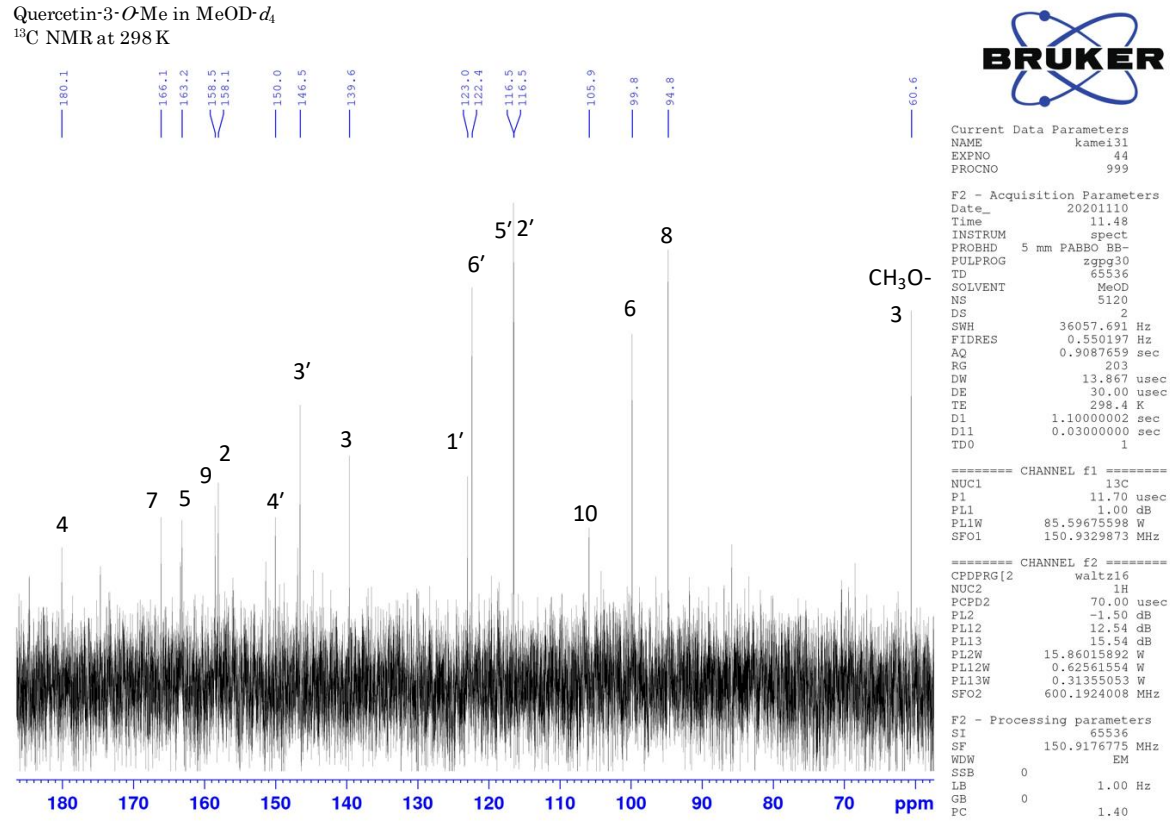
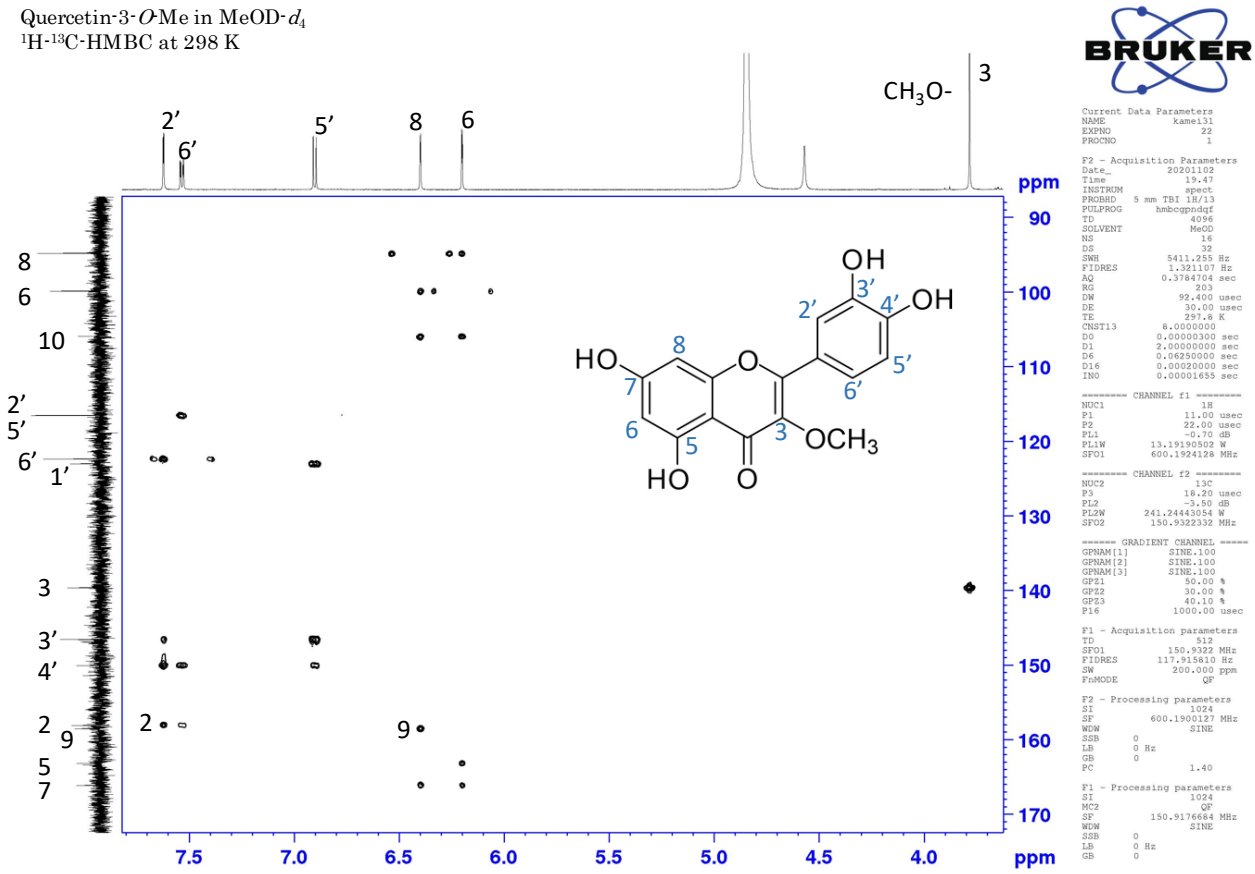



**Figure S12:** Full assignment $^{13}C$ NMR spectrum of compound **4** recorded in $CD_3OD$





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DE 30.00 usec
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SFO1 600.1924128 MHz

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SFO2 150.9322332 MHz

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GPZ2 30.00 %
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SSB 0
LB 0 Hz
GB 0
PC 1.40

F1 - Processing parameters
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WDW SINE
SSB 0
LB 0 Hz
GB 0


**Figure S13:** $^{1}H$-$^{13}C$ HMBC spectrum of compound **4** recorded in $CD_3OD$

**Table S5:** NMR data of compound **6** identified from *P. clematidea* extract in $CD_3OD$

| Position | $^{13}$C-NMR (150 MHz) | $^{1}$H-NMR (600 MHz) | HMBC ($^{1}H \rightarrow {}^{13}C$) |
|---|---|---|---|
| 1 | 153.6 | | |
| 2 | 118.8 | 6.95 (2H, d, 9.0 Hz) | C-1,3,4,6 |
| 3 | 124.0 | 6.82 (2H, d, 9.0 Hz) | C-1,2,4,5 |
| 4 | 145.3 | | |
| 5 | 124.0 | 6.82 (2H, d, 9.0 Hz) | C-1,3,4,6 |
| 6 | 118.8 | 6.95 (2H, d, 9.0 Hz) | C-1,2,4,5 |
| 1′,1″ | 154.2 | | |
| 2′,2″ | 116.9 | 6.68 (4H, d, 9.0 Hz) | C-1′,3′,4′,6′ C-1″,3″,4″,6″ |
| 3′,3″ | 126.8 | 6.83 (4H, d, 9.0 Hz) | C-1′,2′,4′,5′ C-1″,2″,4″,5″ |
| 4′,4″ | 142.3 | | |
| 5′,5″ | 126.8 | 6.83 (4H, d, 9.0 Hz) | C-1′,3′,4′,6′ C-1″,3″,4″,6″ |
| 6′,6″ | 116.9 | 6.68 (4H, d, 9.0 Hz) | C-1′,2′,4′,5′ C-1″,2″,4″,5″ |
| glc 1 | 103.1 | 4.80 (1H, d, 7.4 Hz) | C-1, glc C-2 |
| glc 2 | 75.0 | 3.42 (1H, m) | glc C-1, glc C-3 |
| glc 3 | 78.1 | 3.44 (1H, m) | glc C-5 |
| glc 4 | 71.5 | 3.38 (1H, m) | |
| glc 5 | 78.1 | 3.38 (1H, m) | |
| glc 6 | 62.6 | 3.69 (1H, dd, 11.9, 5.1 Hz) | glc C-5 |
| | | 3.88 (1H, dd, 11.9, 1.5 Hz) | |

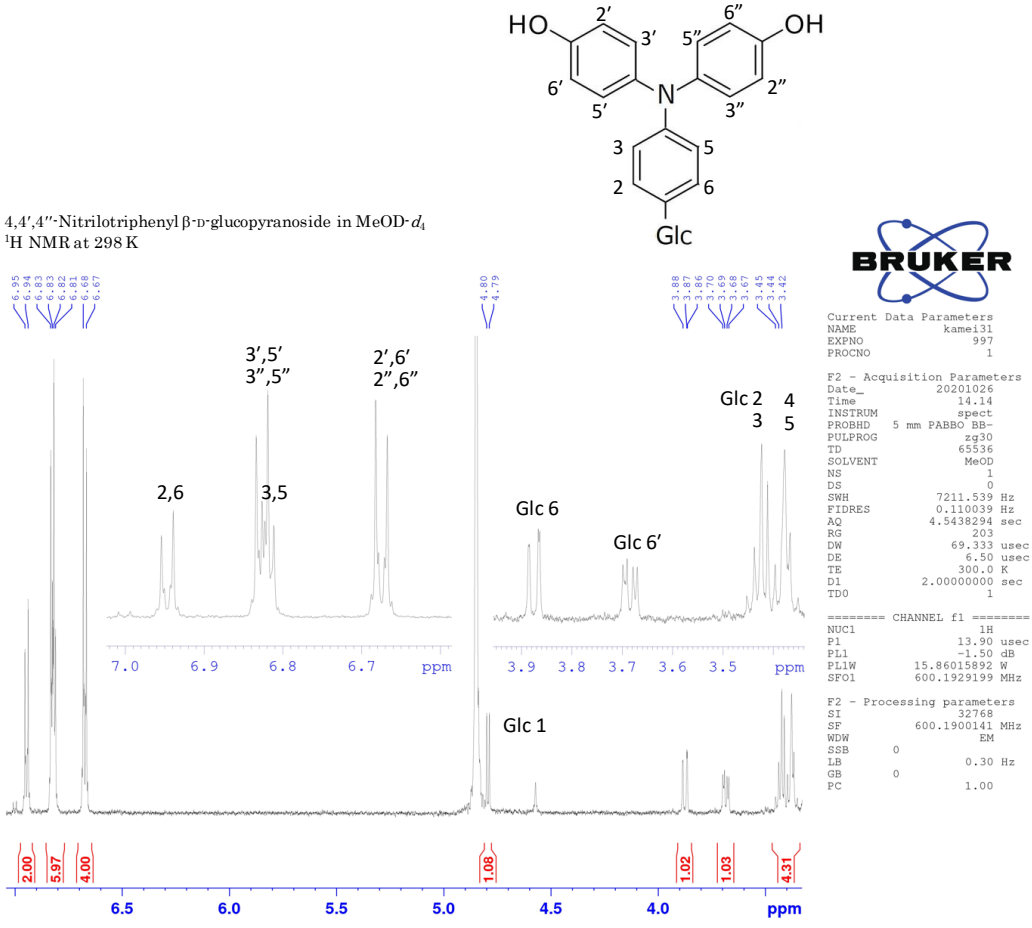
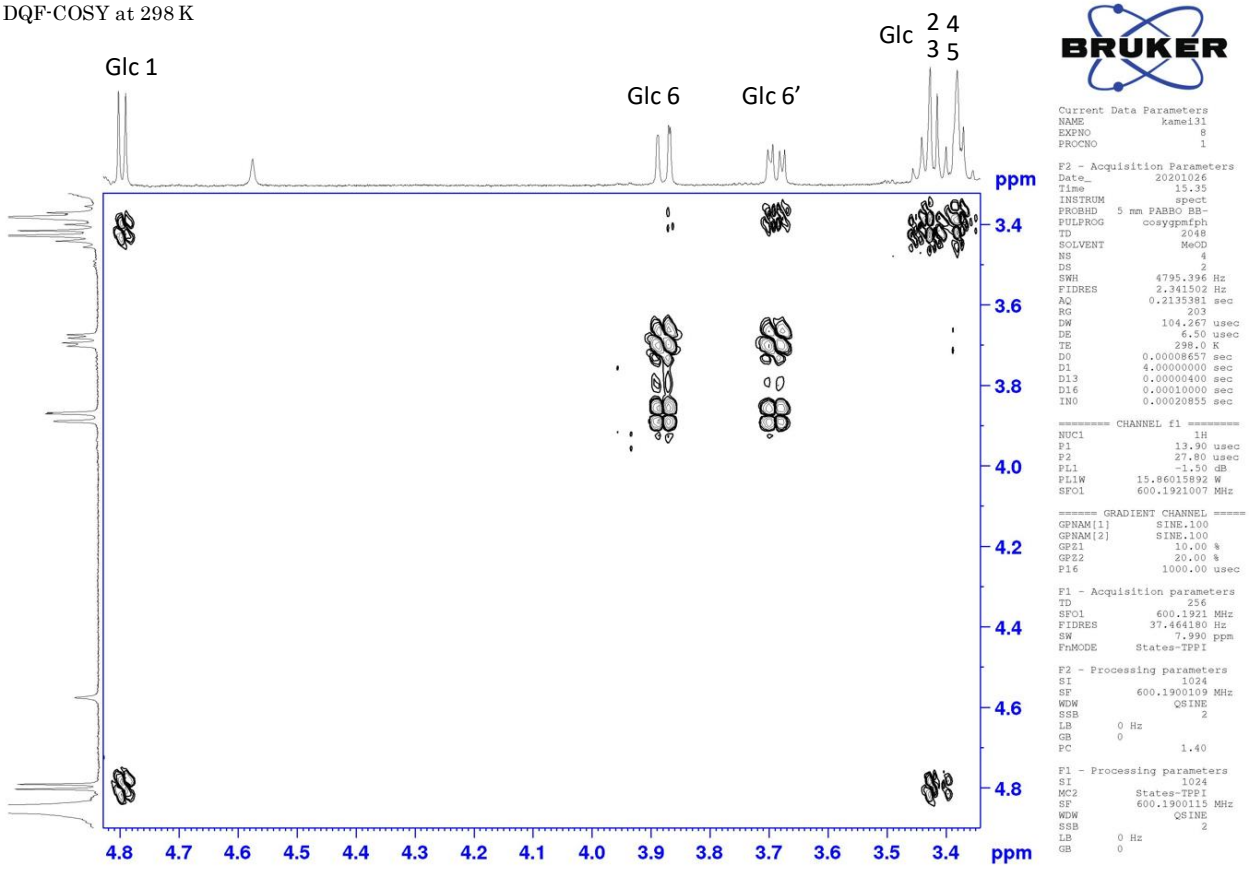



**Figure S14:** Full assignment $^{1}$H NMR spectrum of compound **5** recorded in $CD_3OD$

4,4',4"-Nitrilotriphenyl β-D-glucopyranoside in MeOD-$d_4$
DQF-COSY at 298 K





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FnMODE States-TPPI

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SSB 2
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GB 0
PC 1.40

F1 - Processing parameters
SI 1024
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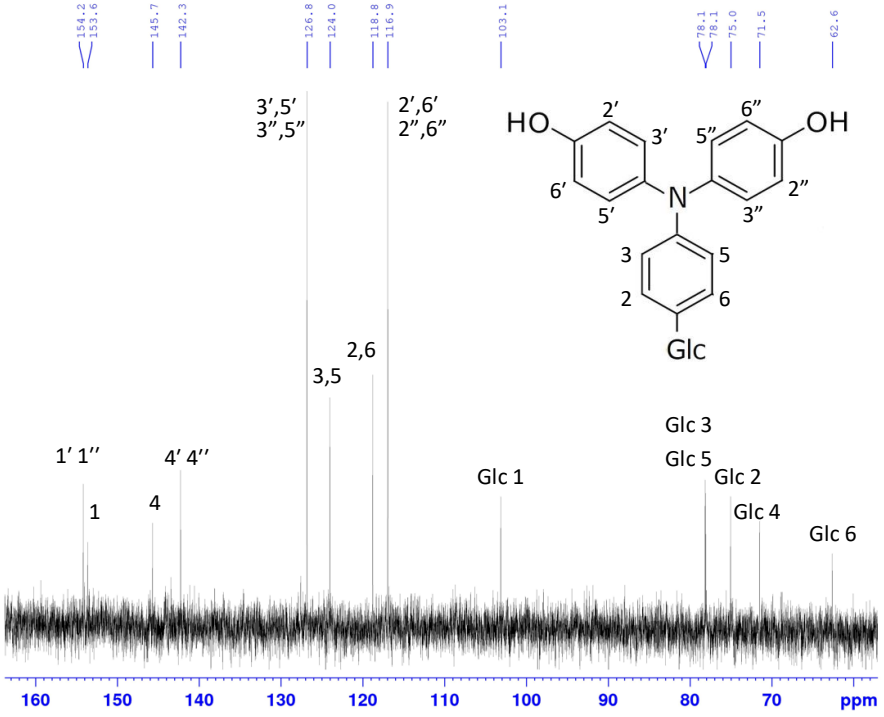
SF 600.1900115 MHz
WDW QSINE
SSB 2
LB 0 Hz
GB 0


**Figure S15:** DQF-COSY spectrum of compound **5** recorded in $CD_3OD$

4,4′,4″-Nitrilotriphenyl β-D-glucopyranoside in MeOD-$d_4$
$^{13}C$ NMR at 298 K





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FIDRES 0.550197 Hz
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RG 203
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DE 30.00 usec
TE 298.5 K
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D11 0.03000000 sec
TD0 1

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NUC1 13C
P1 11.70 usec
PL1 1.00 dB
PL1W 85.59675598 W
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SFO2 600.1924008 MHz

F2 - Processing parameters
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SSB 0
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PC 1.40


**Figure S16:** $^{13}C$ NMR spectrum of compound **5** recorded in $CD_3OD$

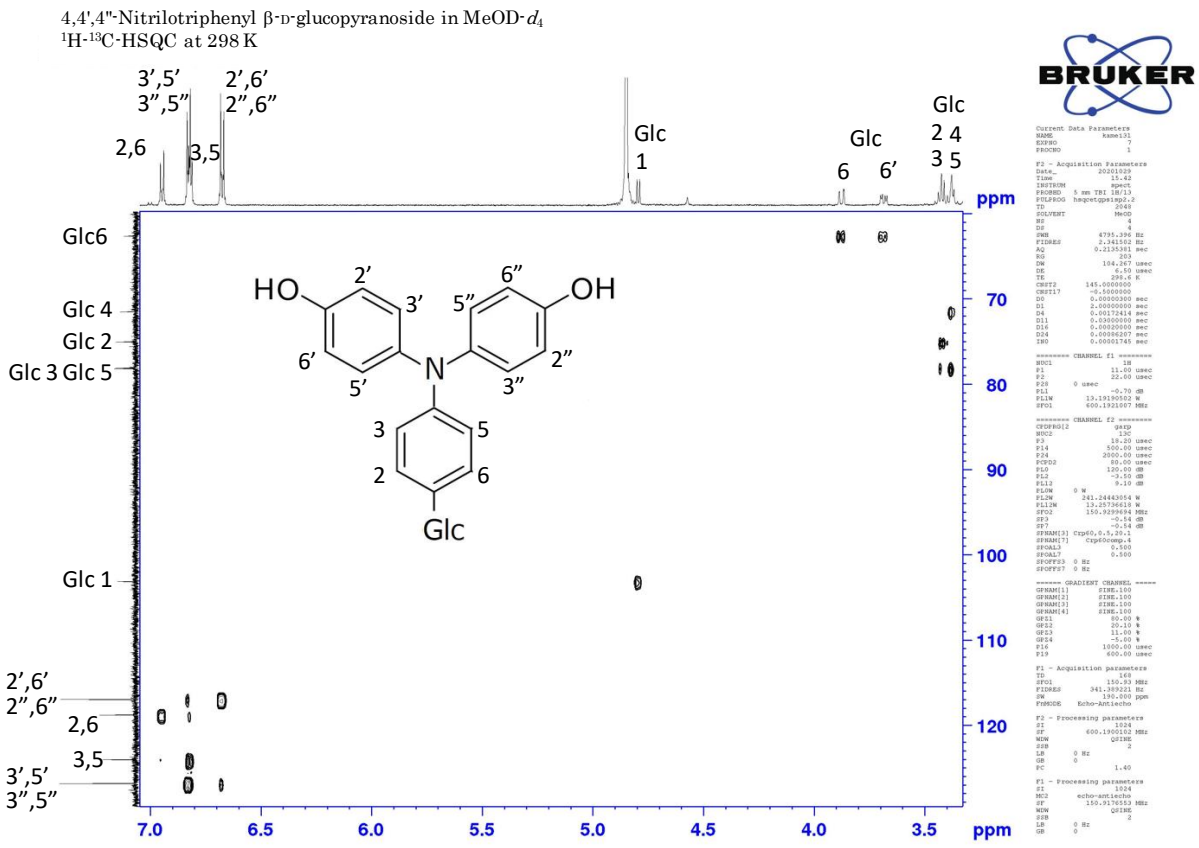



**Figure S17:** $^1$H-$^{13}$C HSQC spectrum of compound **5** recorded in $CD_3OD$

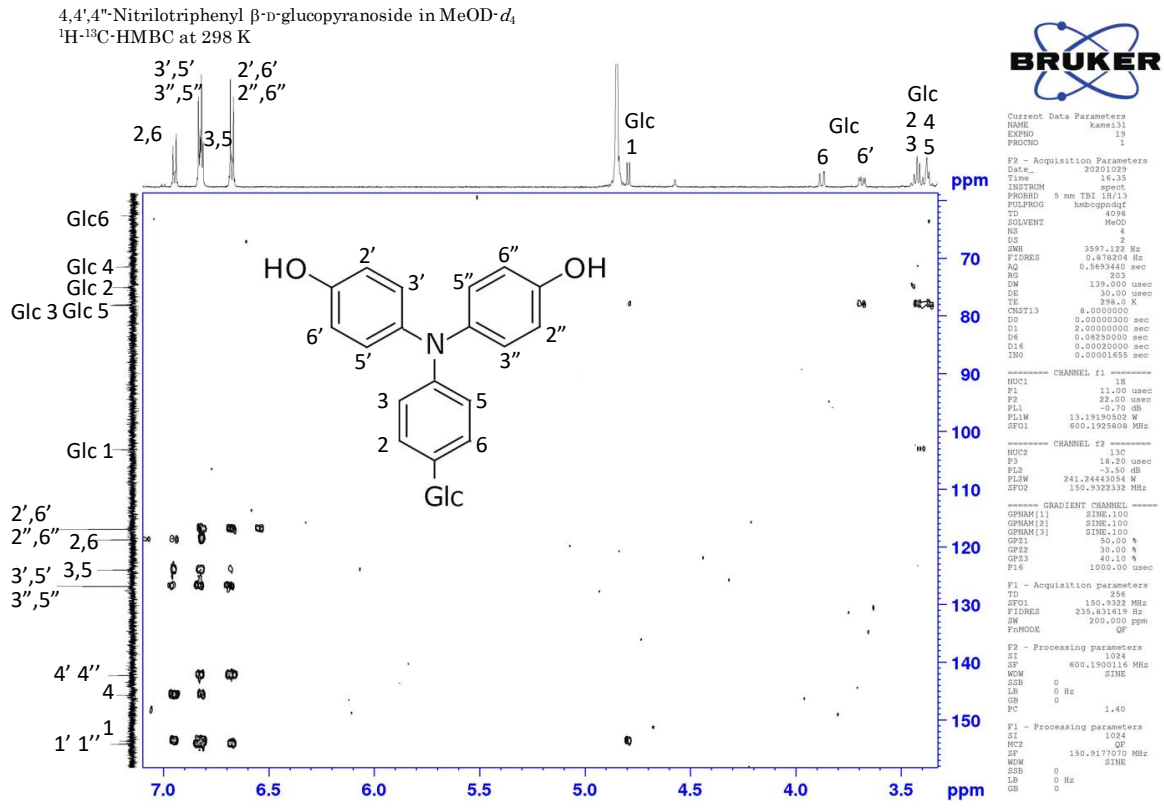



**Figure S18:** $^1$H-$^{13}$C HMBC spectrum of compound **5** recorded in $CD_3OD$

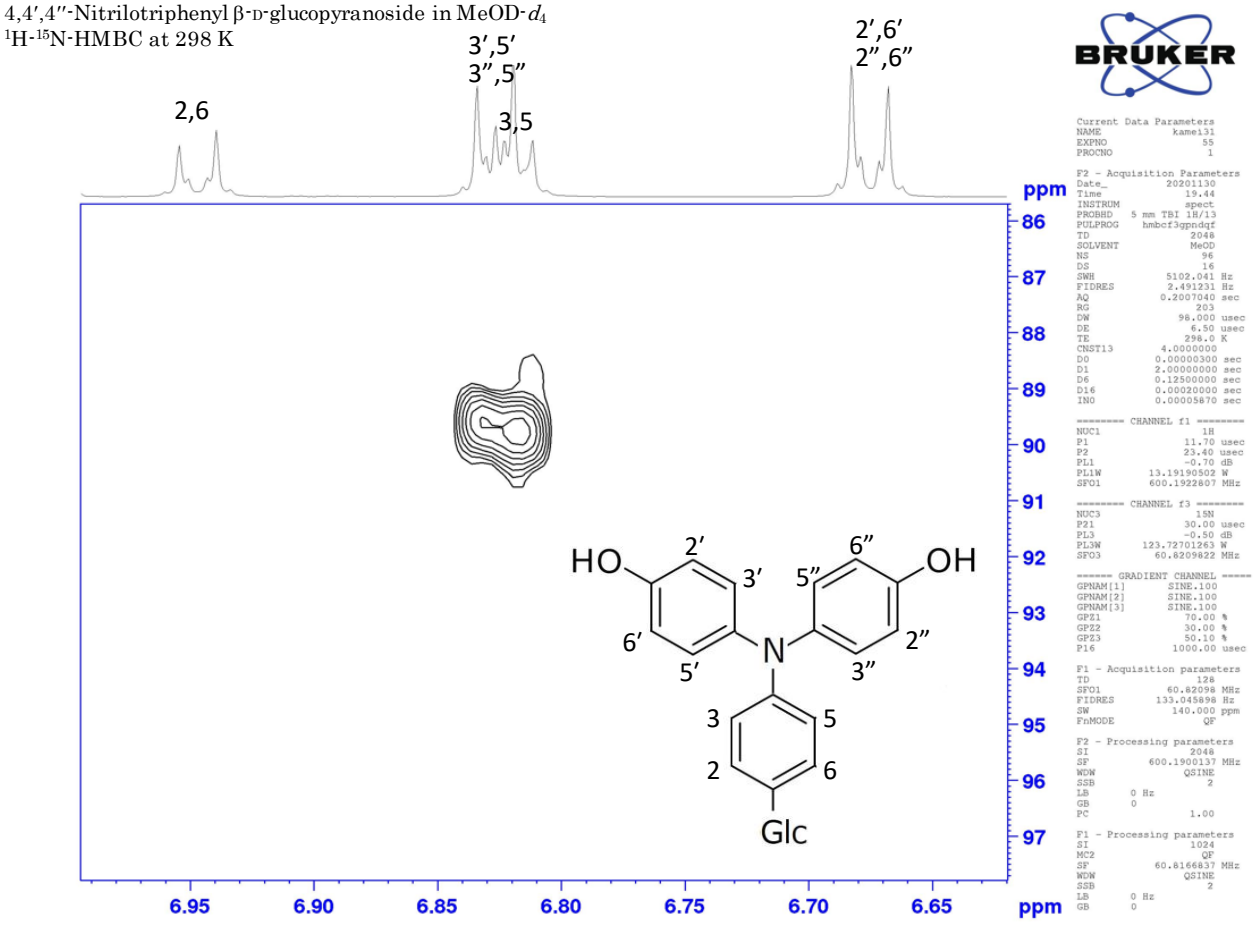



**Figure S19:** $^1$H-$^{15}$N HMBC spectrum of compound **5** recorded in $CD_3OD$

**Table S6:** NMR data of compound **6** identified from *P. clematidea* extract in $CD_3OD$

| Position | $^{13}$C-NMR (150 MHz) | $^{1}$H-NMR (600 MHz) | HMBC ($^{1}$H → $^{13}$C) |
|---|---|---|---|
| 2 | 163.8 | | |
| 3 | 106.9 | 6.62(1H, s) | C-2,4,10,1′ |
| 4 | 179.6 | | |
| 5 | 153.4 | | |
| 6 | 141.8 | | |
| 7 | 160.0 | | |
| 8 | 98.0 | 7.09(1H, s) | C-4,6,7,9,10 |
| 9 | 156.1 | | |
| 10 | 113.1 | | |
| 1′ | 124.5 | | |
| 2′ | 129.1 | 7.94 (2H, d, 8.9 Hz) | C-2,4′,6′ |
| 3′ | 115.6 | 7.07 (2H, d, 8.9 Hz) | C-1′,4′,5′ |
| 4′ | 164.2 | | |
| 5′ | 115.6 | 7.07 (2H, d, 8.9 Hz) | C-1′,3′,4′ |
| 6′ | 129.1 | 7.94 (2H, d, 8.9 Hz) | C-2,2′,4′ |
| 5-O-Me | 62.7 | 3.92 | C-5 |
| 6-O-Me | 61.8 | 3.86 | C-6 |
| 7-O-Me | 57.1 | 4.00 | C-7 |
| 4′-O-Me | 56.1 | 3.88 | C-4′ |

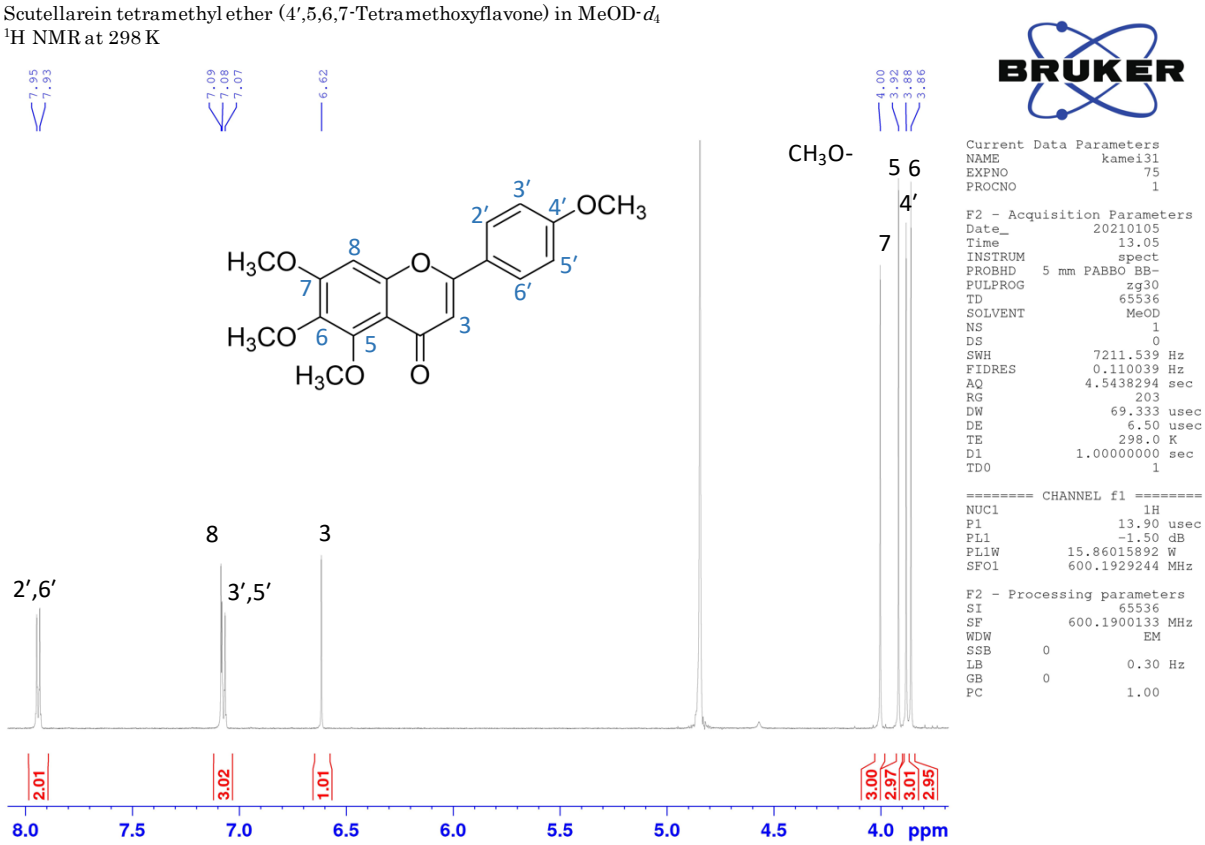



**Figure S20:** Full assignment $^{1}$H NMR spectrum of compound **6** recorded in $CD_3OD$

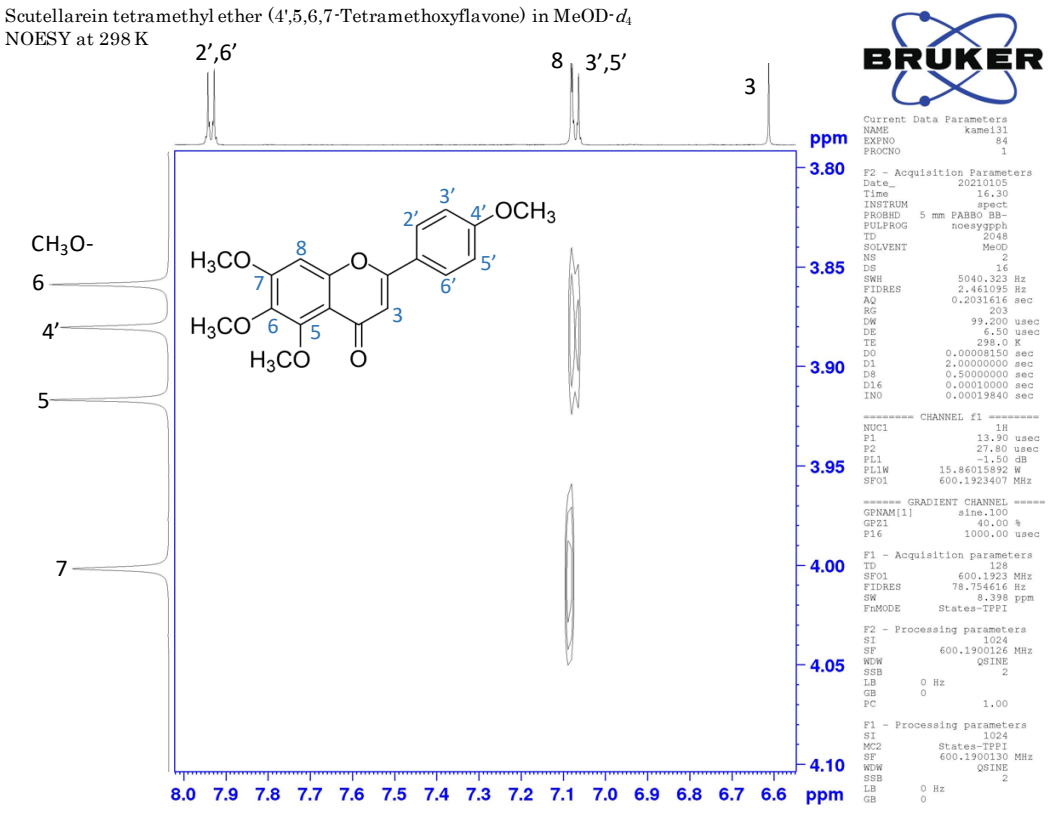



**Figure S21:** NOESY spectrum of compound **6** recorded in $CD_3OD$

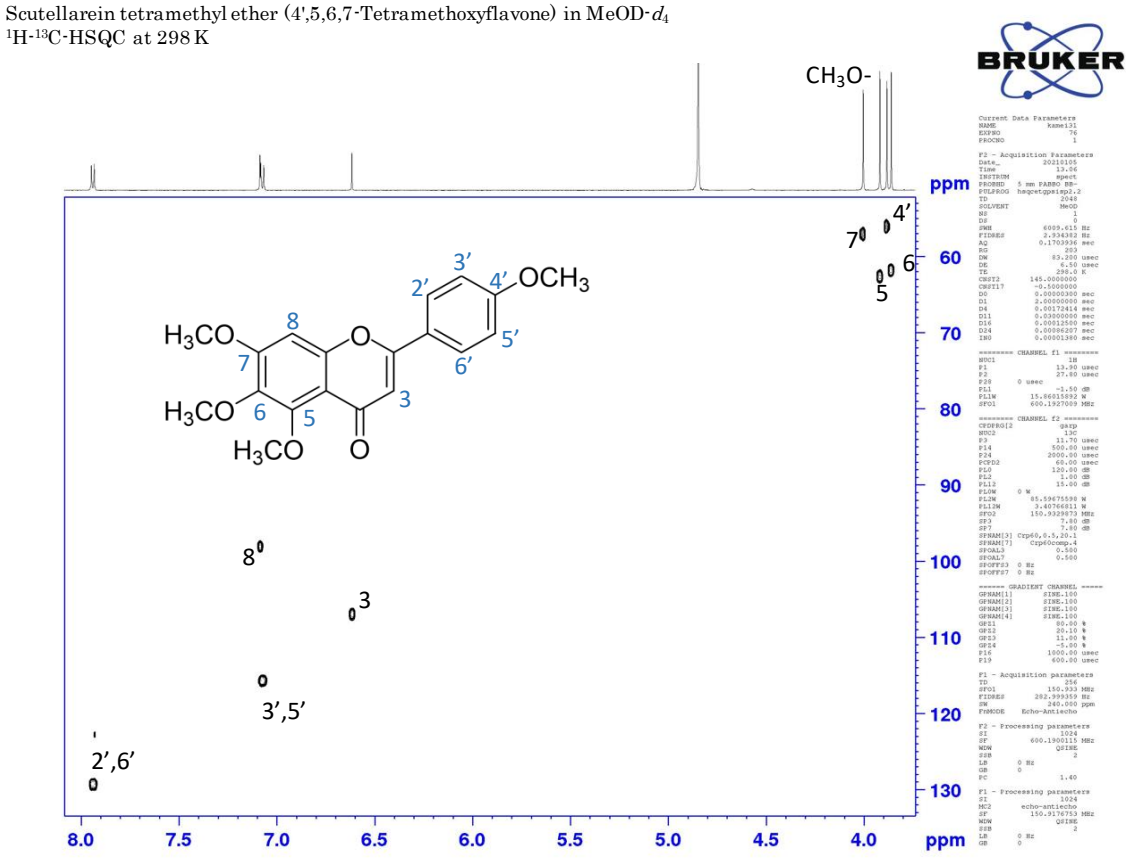
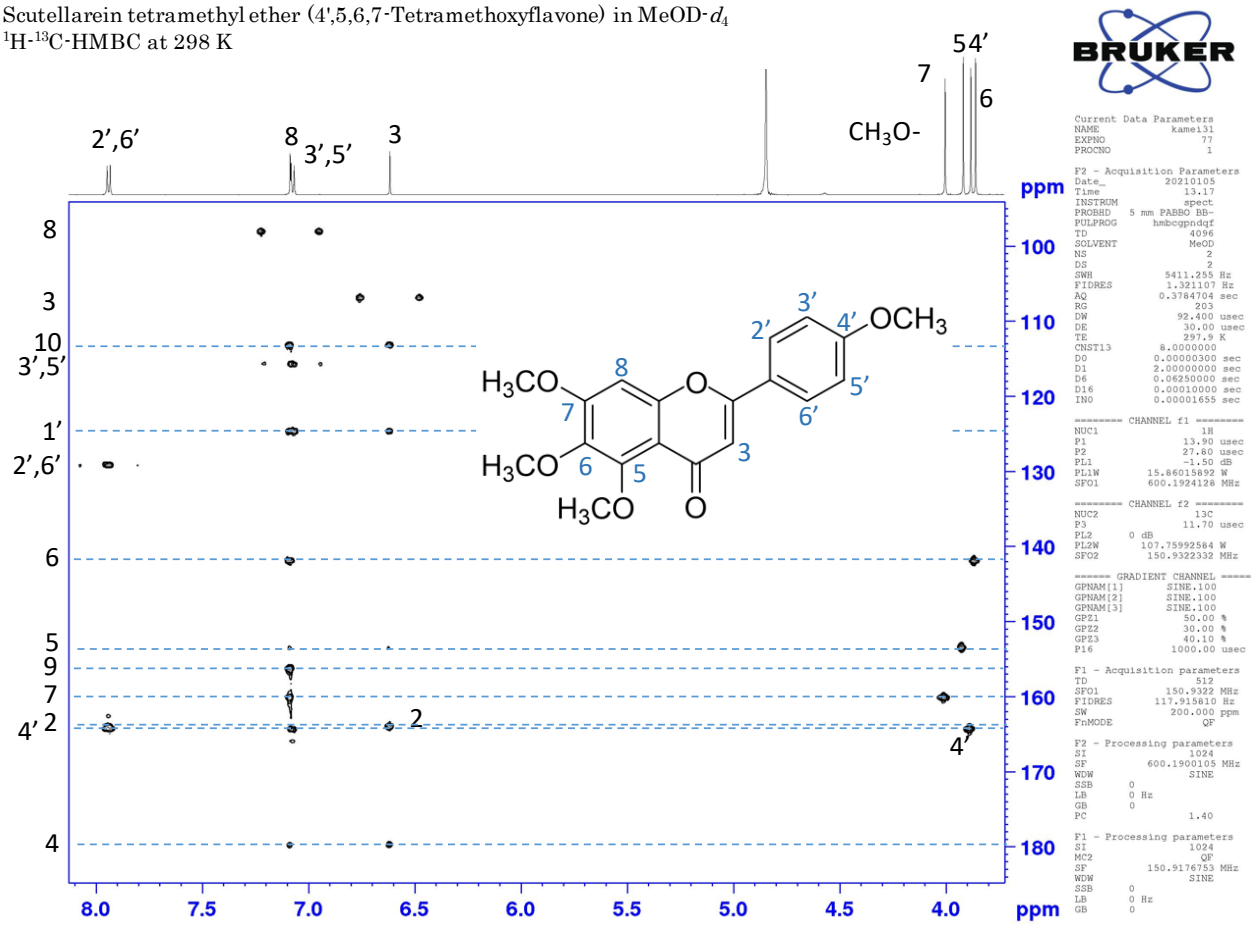



**Figure S22:** $^1H$-$^{13}C$ HSQC spectrum of compound **6** recorded in $CD_3OD$

Scutellarein tetramethyl ether (4',5,6,7-Tetramethoxyflavone) in MeOD-$d_4$
$^{1}$H-$^{13}$C-HMBC at 298 K





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P2 27.80 usec
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PL1W 15.86015892 W
SFO1 600.1924126 MHz

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PL2 0 dB
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GPZ2 30.00 %
GPZ3 40.10 %
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FIDRES 117.915810 Hz
SW 200.000 ppm
FnMODE QF

F2 - Processing parameters
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SF 600.1900105 MHz
WDW SINE
SSB 0
LB 0 Hz
GB 0
PC 1.40

F1 - Processing parameters
SI 1024
MC2 QF
SF 150.9176753 MHz
WDW SINE
SSB 0
LB 0 Hz
GB 0


**Figure S23:** $^{1}$H-$^{13}$C HMBC spectrum of compound **6** recorded in $CD_3OD$

**Table S7:** NMR data of compound **7** identified from *P. clematidea* extract in $CD_3OD$

| Position | $^{13}$C-NMR (150 MHz) | $^{1}$H-NMR (600 MHz) | HMBC ($^{1}$H → $^{13}$C) |
|---|---|---|---|
| 2 | 163.4 | | |
| 3 | 107.3 | 6.53 (1H, s) | C-2,4,10,1′ |
| 4 | 180.1 | | |
| 5 | 162.1 | | |
| 6 | 97.4 | 6.44 (1H, d, 2.2 Hz) | C-5,7,8,10 |
| 7 | 166.5 | | |
| 8 | 94.3 | 6.67 (1H, d, 2.2 Hz) | C-6,7, 9,10 |
| 9 | 161.3 | | |
| 10 | 109.4 | | |
| 1′ | 124.5 | | |
| 2′ | 129.0 | 7.85 (1H, d, 8.9 Hz) | C-2,4′,6′ |
| 3′ | 115.6 | 7.02 (1H, d, 8.9 Hz) | C-1′,4′,5′ |
| 4′ | 164.2 | | |
| 5′ | 115.6 | 7.02 (1H, d, 8.9 Hz) | C-1′,3′,4′ |
| 6′ | 129.0 | 7.85 (1H, d, 8.9 Hz) | C-2,2′,4′ |
| 5-O-Me | 56.60 | 3.87 | C-5 |
| 7-O-Me | 56.60 | 3.91 | C-7 |
| 4′-O-Me | 56.10 | 3.86 | C-4′ |

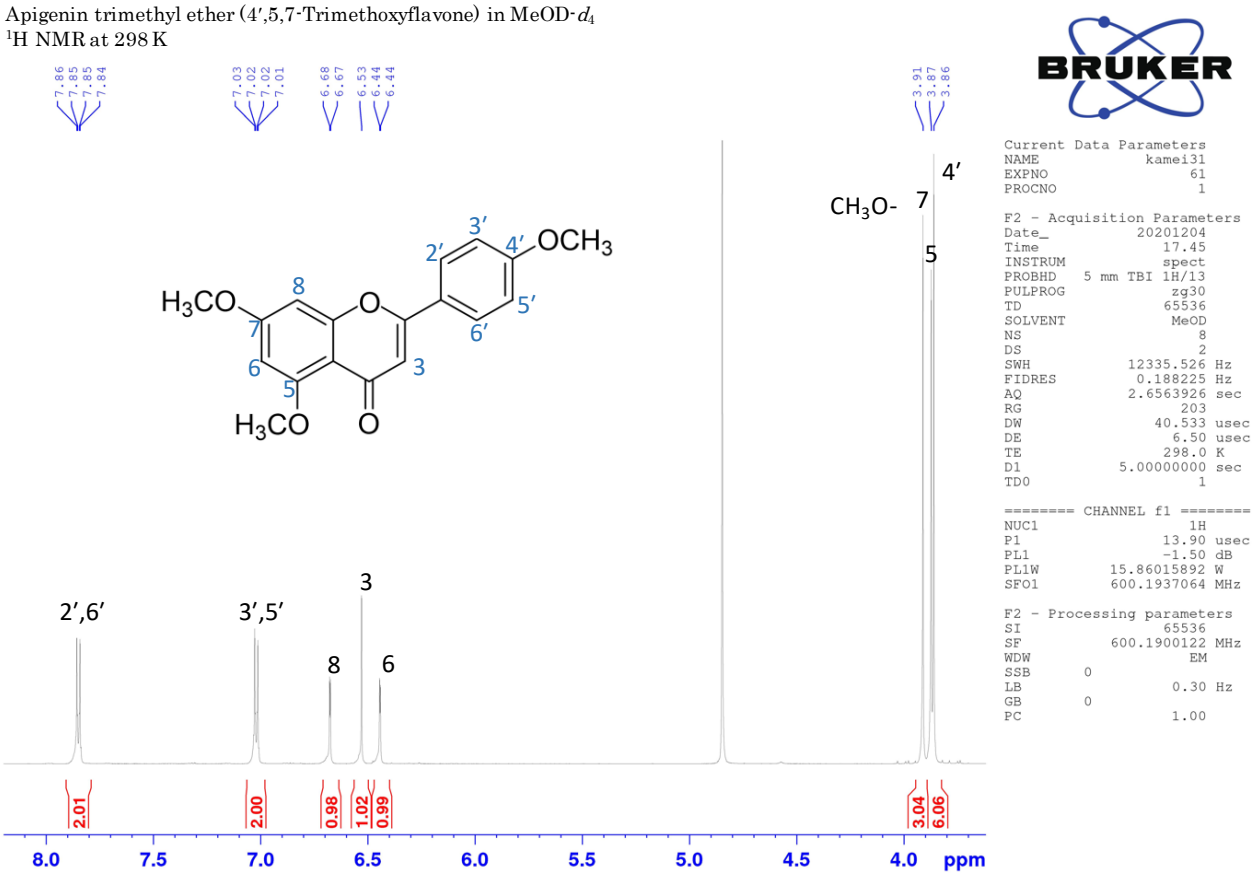



**Figure S24:** Full assignment $^{1}$H NMR spectrum of compound **7** recorded in $CD_3OD$

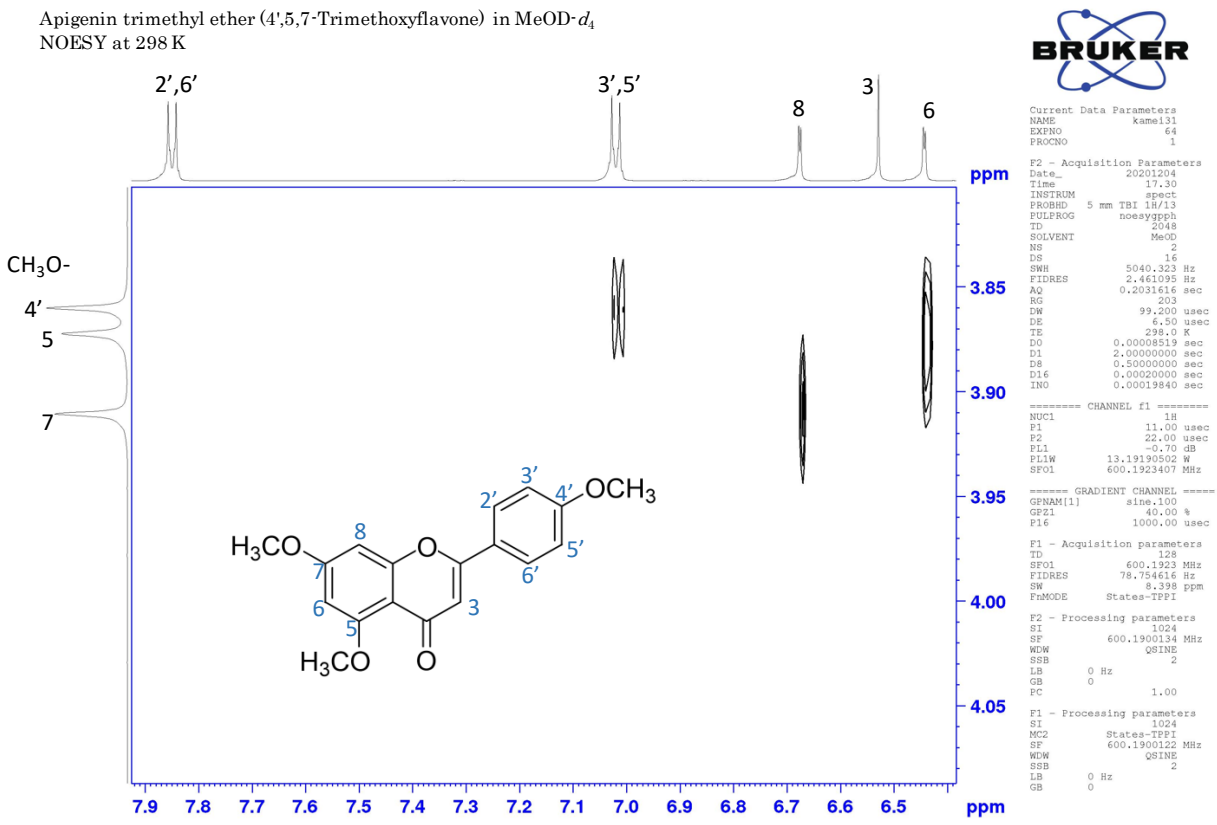



**Figure S25:** NOESY spectrum of compound **7** recorded in $CD_3OD$

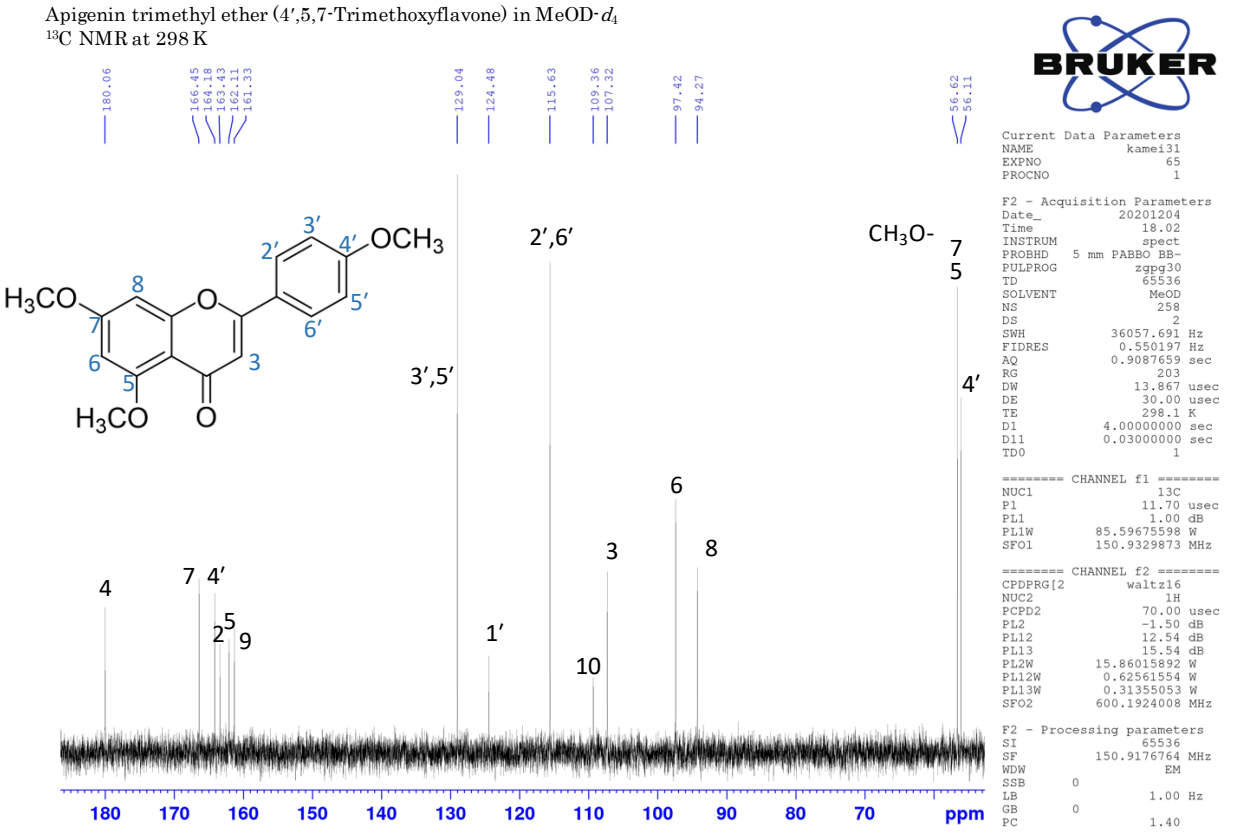



**Figure S26:** $^{13}$C NMR spectrum of compound **7** recorded in $CD_3OD$

Apigenin trimethyl ether (4',5,7-Trimethoxyflavone) in MeOD-$d_4$
$^1$H-$^{13}$C-HSQC at 298 K

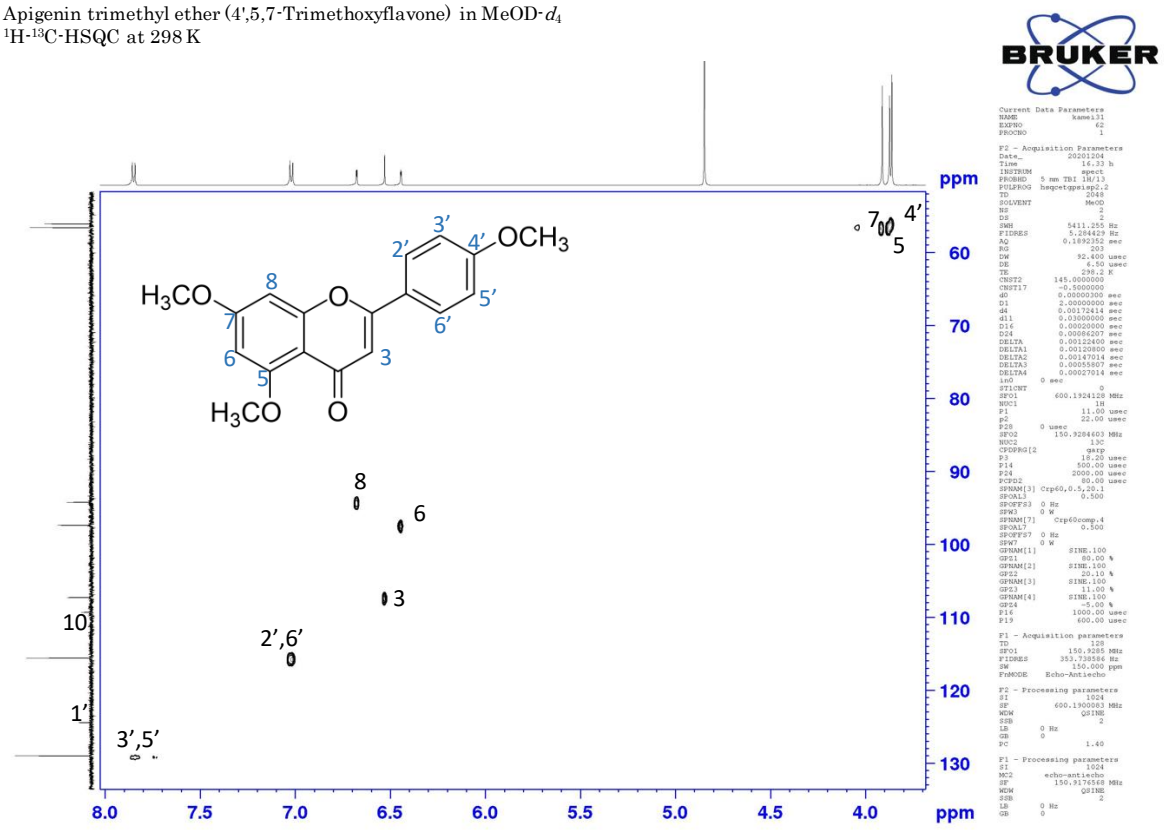



**Figure S27:** $^1$H-$^{13}$C HSQC spectrum of compound **7** recorded in $CD_3OD$

Apigenin trimethyl ether (4',5,7-Trimethoxyflavone) in MeOD-$d_4$
$^1$H-$^{13}$C-HMBC at 298 K

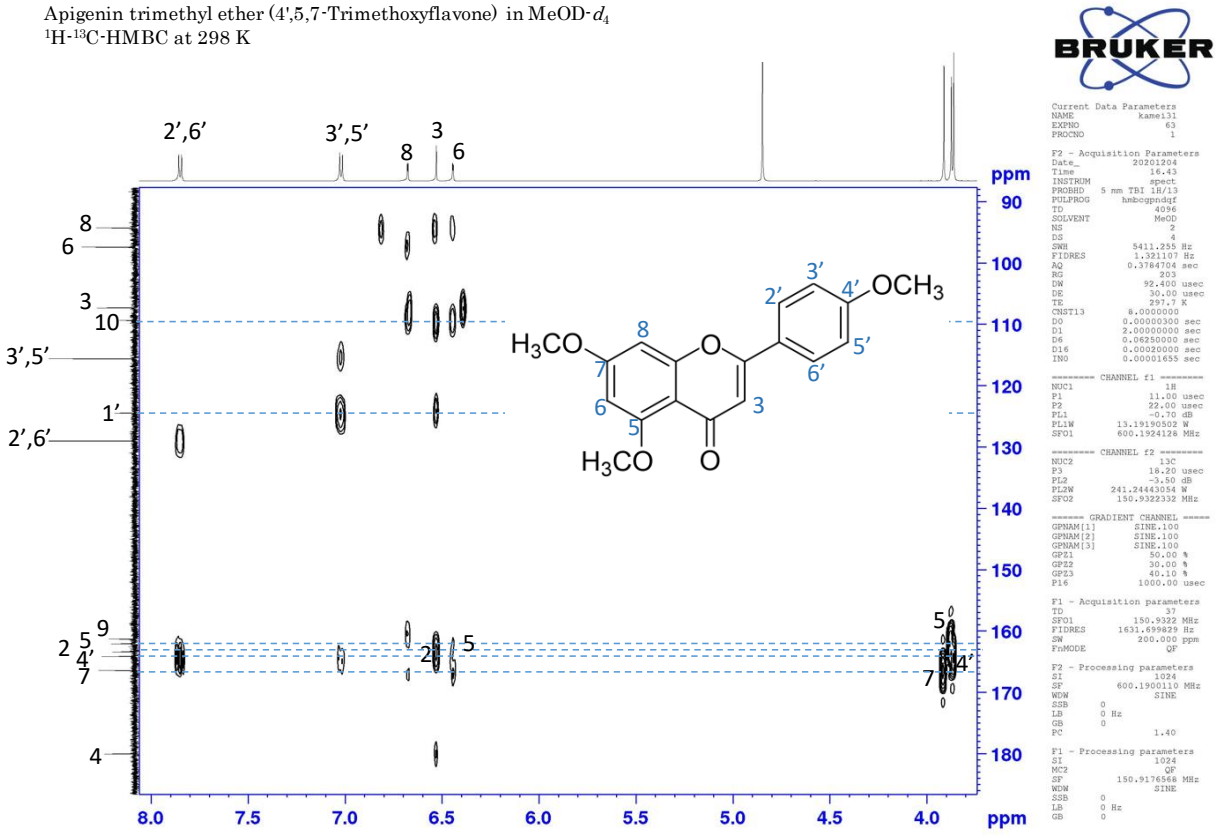



**Figure S28:** $^1$H-$^{13}$C HMBC spectrum of compound **7** recorded in $CD_3OD$

**Table :** NMR data of compound S**8** identified from *P. clematidea* extract in $CD_3OD$

| Position | $^{13}$C-NMR (150 MHz) | $^{1}$H-NMR (600 MHz) | HMBC ($^{1}$H → $^{13}$C) |
|---|---|---|---|
| 2 | 163.8 | | |
| 3 | 107.1 | 6.66 (1H, s) | C-2,4,10,1′ |
| 4 | 179.6 | | |
| 5 | 153.3 | | |
| 6 | 141.8 | | |
| 7 | 160.0 | | |
| 8 | 98.2 | 7.14(1H, s) | C-4,6,7,9,10 |
| 9 | 156.2 | | |
| 10 | 113.1 | | |
| 1′ | 125.0 | | |
| 2′ | 110.7 | 7.51 (1H, d, 2.1 Hz) | C-2,3′,4′,6′ |
| 3′ | 151.0 | | |
| 4′ | 153.8 | | |
| 5′ | 112.8 | 7.11 (1H, d, 8.5 Hz) | C-1′,3′ |
| 6′ | 121.4 | 7.63 (1H, dd, 8.5, 2.1 Hz) | C-2,2′,4′ |
| 5-O-Me | 62.6 | 3.92 | C-5 |
| 6-O-Me | 61.9 | 3.86 | C-6 |
| 7-O-Me | 57.2 | 4.01 | C-7 |
| 3′-O-Me | 56.7 | 3.95 | C-3′ |
| 4′-O-Me | 56.7 | 3.92 | C-4′ |

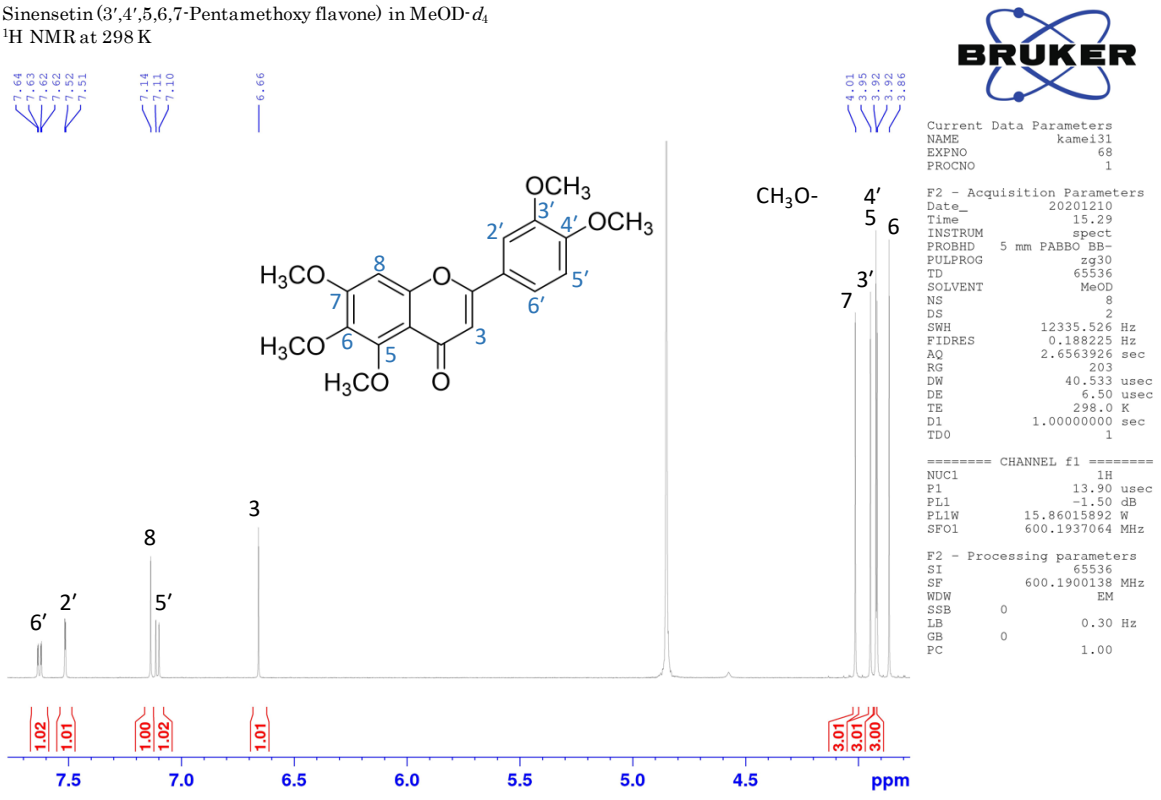



**Figure S29:** Full assignment $^{1}$H NMR spectrum of compound **8** recorded in $CD_3OD$

Sinensetin (3',4',5,6,7-Pentamethoxy flavone) in MeOD-$d_4$
$^{1}$H-$^{13}$C-HSQC at 298 K

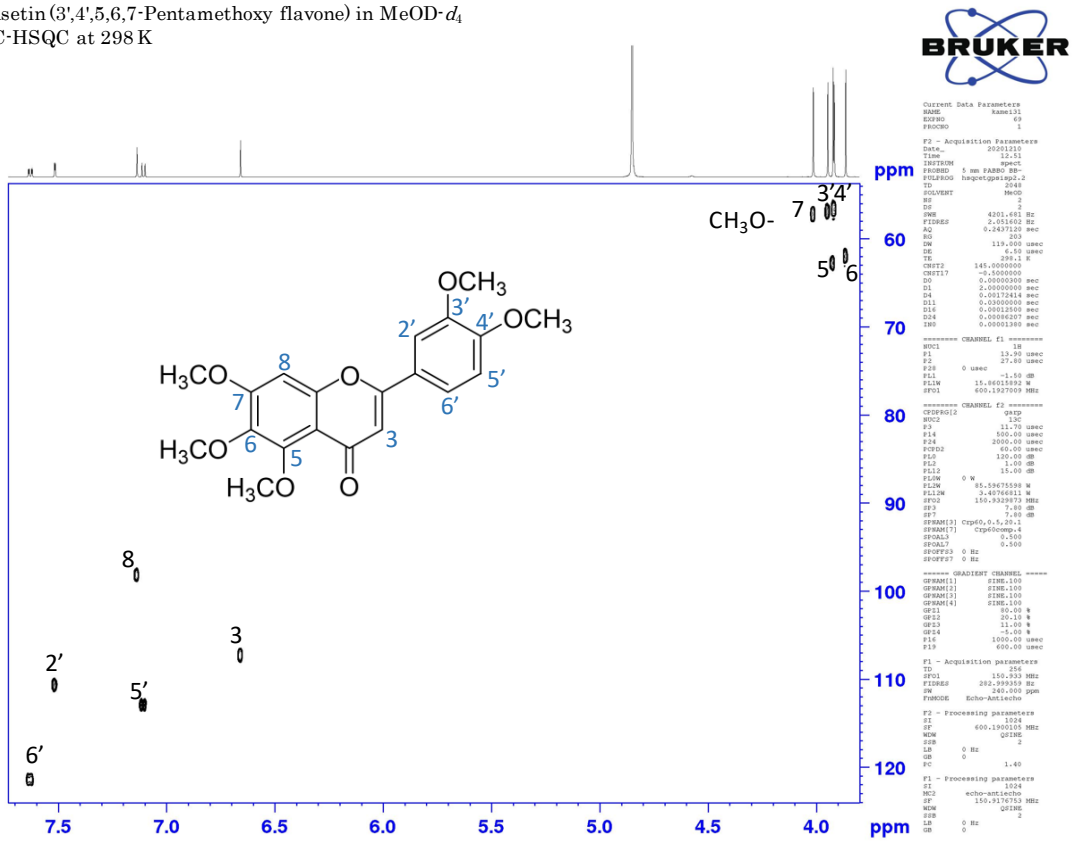



**Figure S30:** $^{1}$H-$^{13}$C HSQC spectrum of compound **8** recorded in $CD_3OD$

Sinensetin (3',4',5,6,7-Pentamethoxy flavone) in MeOD-$d_4$
$^{1}$H-$^{13}$C-HMBC at 298 K

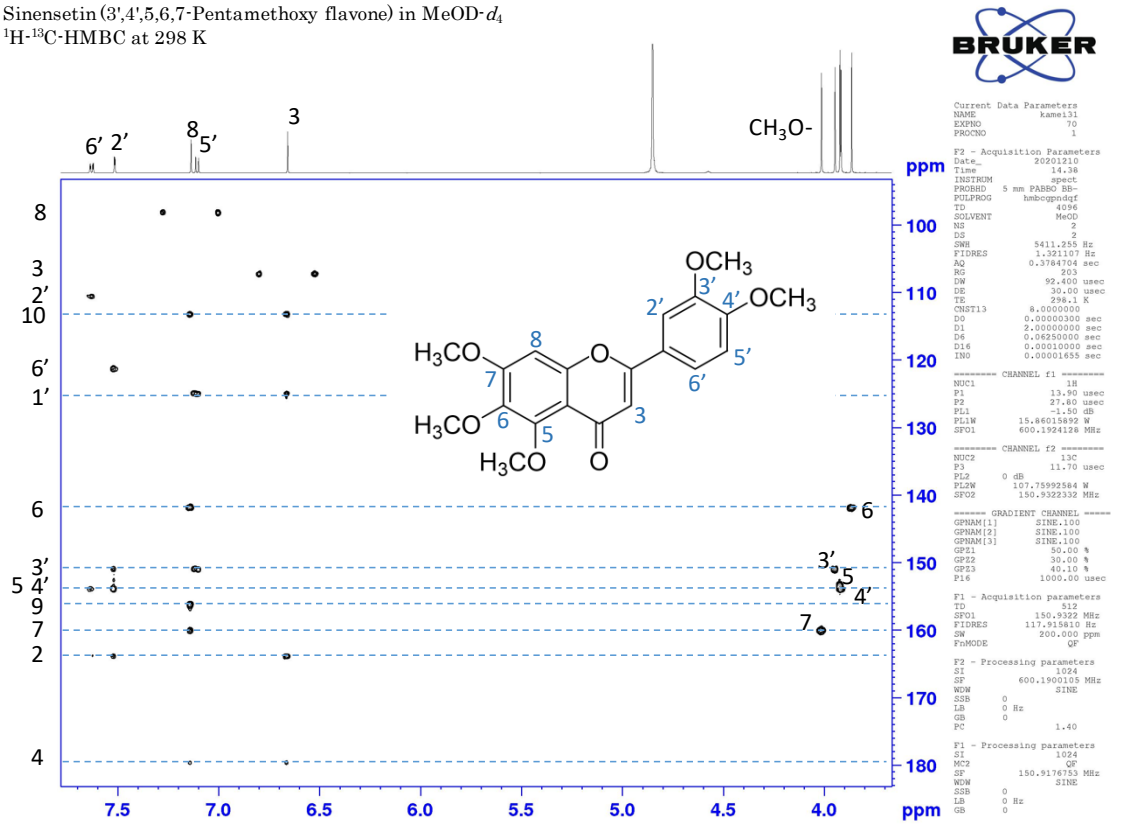


**Figure S31:** $^{1}H$-$^{13}C$ HMBC spectrum of compound **8** recorded in $CD_3OD$

**Table :** NMR data of compound S**9** identified from *P. clematidea* extract in $CD_3OD$

| Position | $^{13}C$-NMR (150 MHz) | $^{1}H$-NMR (600 MHz) | HMBC ($^{1}H \rightarrow {}^{13}C$) |
|---|---|---|---|
| 2 | 163.4 | | |
| 3 | 107.6 | 6.63 (1H, s) | C-2,4,10,1′ |
| 4 | 180.1 | | |
| 5 | 162.1 | | |
| 6 | 97.5 | 6.52 (1H, d, 2.2 Hz) | C-5,7, 8,10 |
| 7 | 166.5 | | |
| 8 | 94.3 | 6.80 (1H, d, 2.2 Hz) | C-6,7,9,10 |
| 9 | 161.4 | | |
| 10 | 109.3 | | |
| 1′ | 124.9 | | |
| 2′ | 110.4 | 7.48 (1H, d, 2.1 Hz) | C-2,3′,4′,6′ |
| 3′ | 150.9 | | |
| 4′ | 153.8 | | |
| 5′ | 112.9 | 7.10 (1H, d, 8.5 Hz) | C-1′,3′,4′ |
| 6′ | 121.2 | 7.60 (1H, dd, 8.5, 2.1 Hz) | C-2,2′,4′ |
| 5-O-Me | 56.7 | 3.91 | C-5 |
| 7-O-Me | 56.7 | 3.95 | C-7 |
| 3′-O-Me | 56.7 | 3.94 | C-3′ |
| 4′-O-Me | 56.7 | 3.91 | C-4′ |

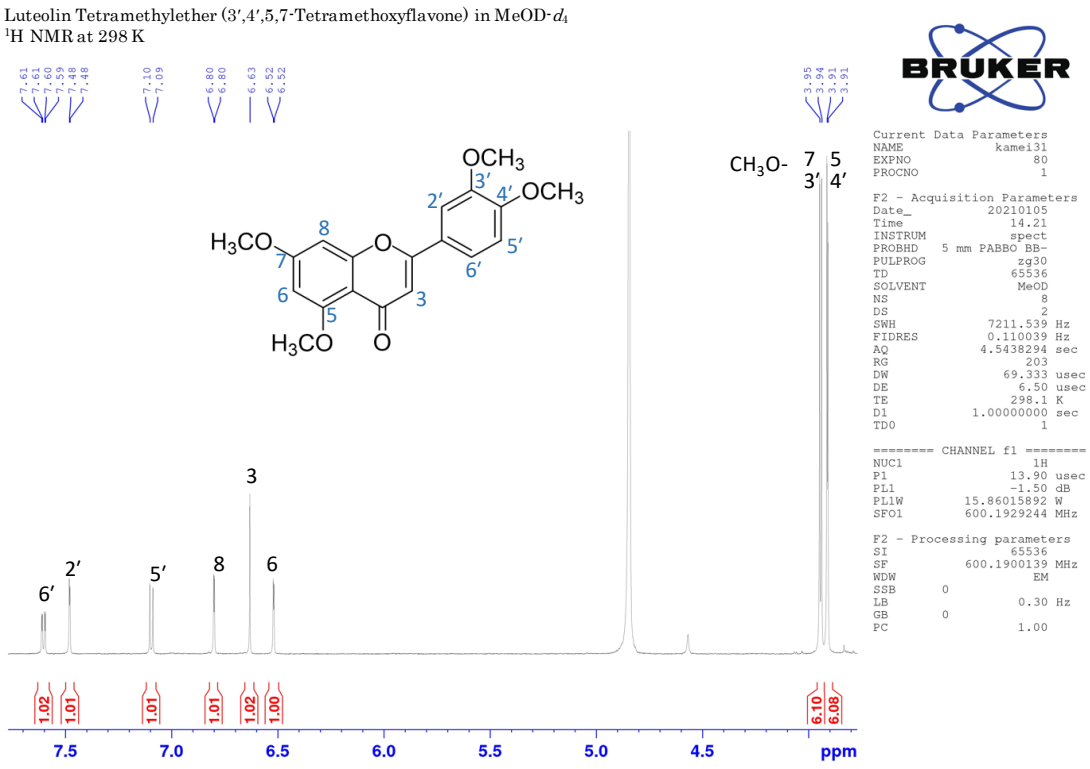



**Figure S32:** Full assignment $^{1}H$ NMR spectrum of compound **9** recorded in $CD_3OD$

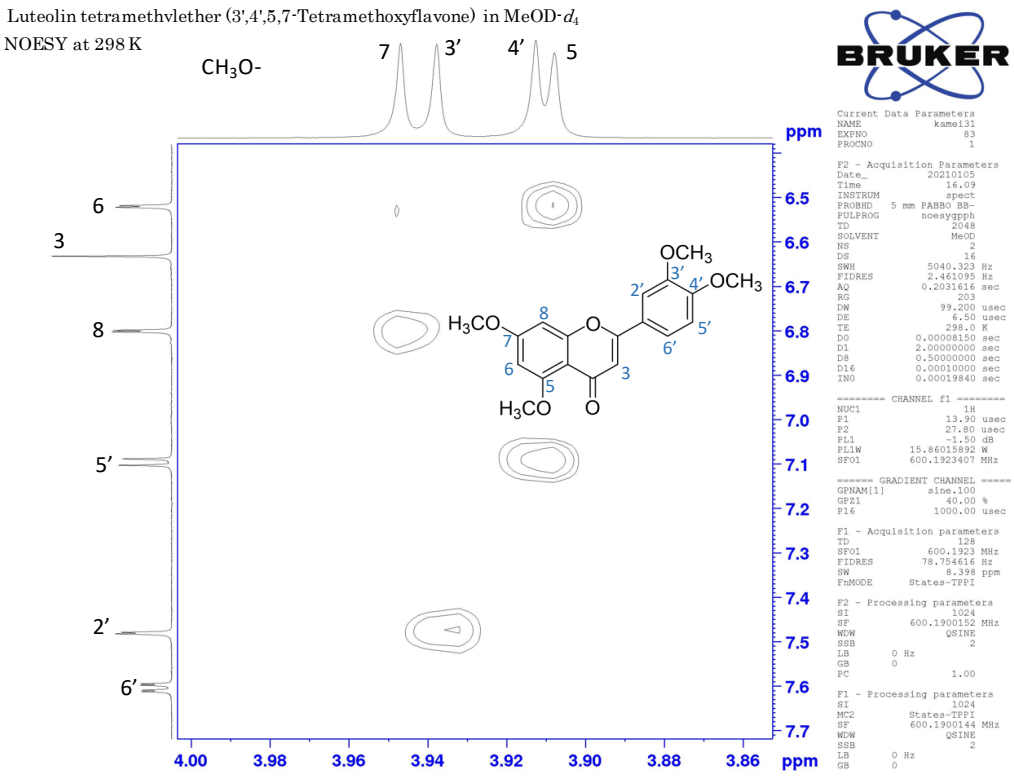



**Figure S33:** NOESY spectrum of compound **9** recorded in $CD_3OD$

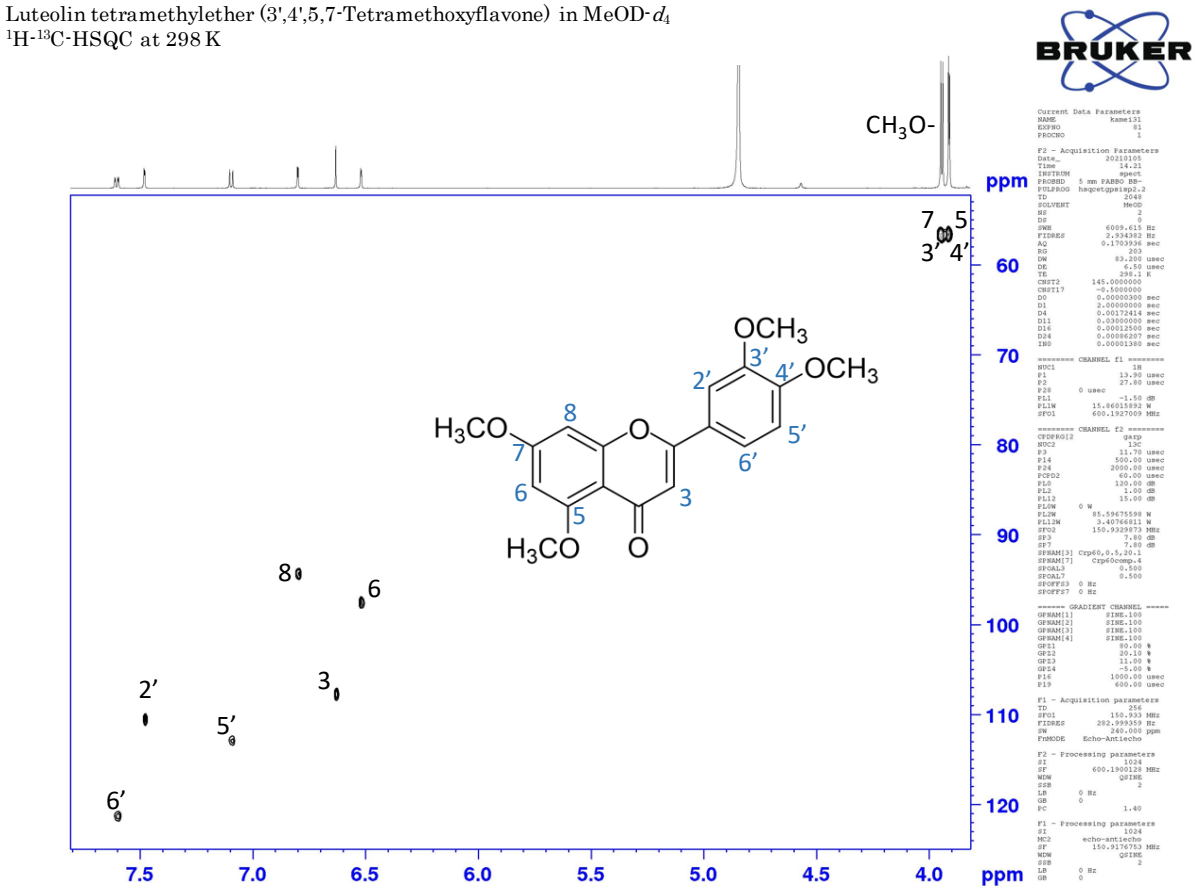
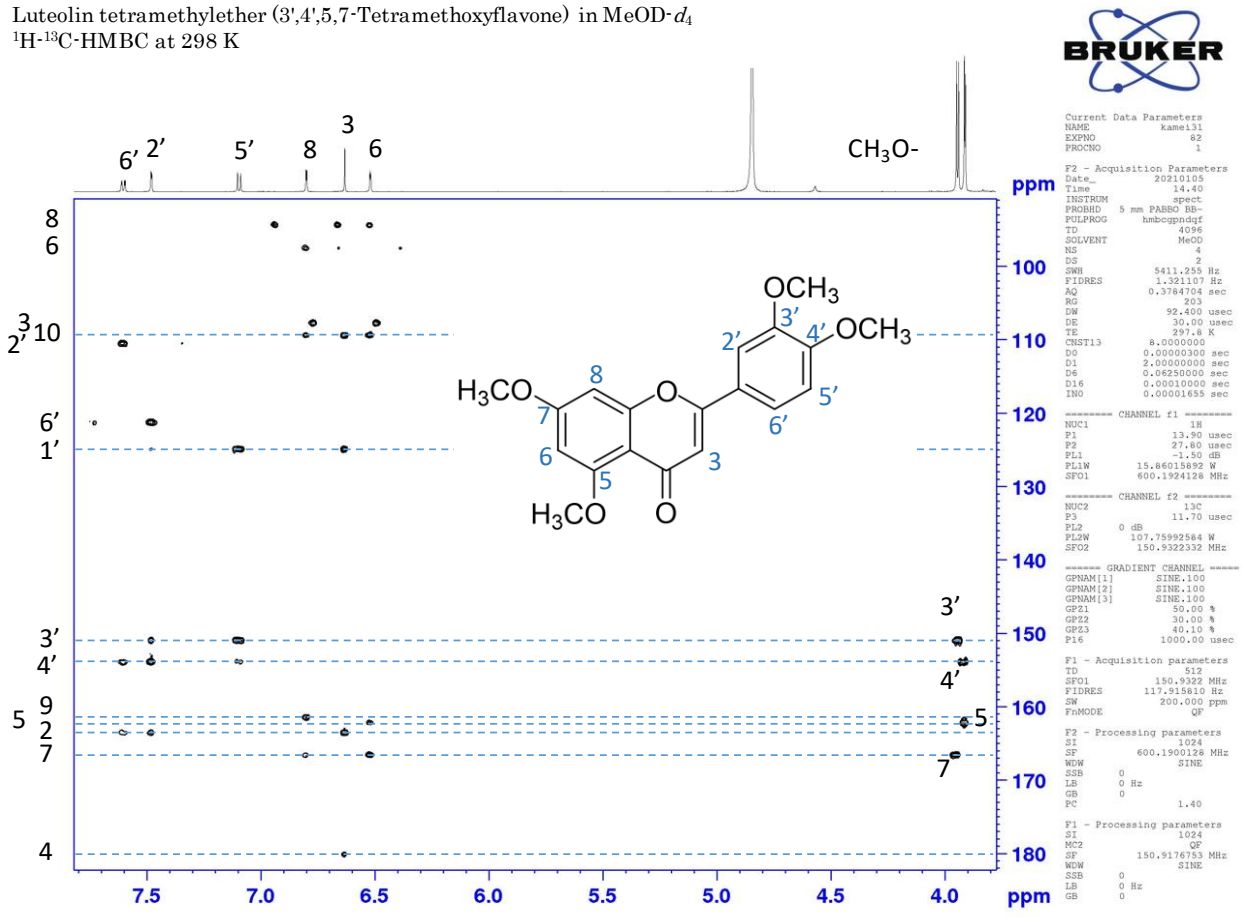



**Figure S34:** $^1H$-$^{13}C$ HSQC spectrum of compound **9** recorded in $CD_3OD$

Luteolin tetramethylether (3',4',5,7-Tetramethoxyflavone) in MeOD-$d_4$
$^{1}$H-$^{13}$C-HMBC at 298 K





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PROCNO 1

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DE 30.00 usec
TE 297.8 K
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D1 2.00000000 sec
D6 0.06250000 sec
D16 0.00010000 sec
IN0 0.00001655 sec

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SFO1 600.1924128 MHz

======== CHANNEL f2 ========
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PL2 0 dB
PL2W 107.75992584 W
SFO2 150.9322332 MHz

====== GRADIENT CHANNEL =====
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GPNAM[2] SINE.100
GPNAM[3] SINE.100
GPZ1 50.00 %
GPZ2 30.00 %
GPZ3 40.10 %
P16 1000.00 usec

F1 - Acquisition parameters
TD 512
SFO1 150.9322 MHz
FIDRES 117.915810 Hz
SW 200.000 ppm
FnMODE QF

F2 - Processing parameters
SI 1024
SF 600.1900128 MHz
WDW SINE
SSB 0
LB 0 Hz
GB 0
PC 1.40

F1 - Processing parameters
SI 1024
MC2 QF
SF 150.9176753 MHz
WDW SINE
SSB 0
LB 0 Hz
GB 0


**Figure S35:** $^{1}$H-$^{13}$C HMBC spectrum of compound **9** recorded in $CD_3OD$